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ABSTRACT

This report discusses the development of a school library program for Canadian schools that departs from tradition by focusing on the instructional role as the most significant work of the teacher-librarian and presents a new program model paradigm. The paradigm is examined under three main headings: (1) the instructional component; (2) student information profiles; and (3) cooperative planning. The focus of the instructional component of the model is its information segment in which five phases are explored: the pre-search phase; information retrieval; information processing; information organizing and creating; and information sharing. The report then discusses what student information profiles are, the importance of having profiles in strengthening library value by building student skills and problem-solving behaviors, and how these profiles are developed for each phase of the information/instructional component. Finally discussed is the cooperative planning and teaching function in which there is integration of information strategies and skills into the curricular programs of the classroom. Reproducible presentation masters on school library programs and the model paradigm are provided. (Contains 24 references.) (GLR)

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Preparing Students For Information Literacy

BARRY ESHPETER

Calgary Board of Education

JUDY GRAY

SCHOOL LIBRARY PROGRAMS AND THE COOPERATIVE PLANNING PROCESS

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Preparing Students For Information Literacy

SCHOOL LIBRARY PROGRAMS AND THE COOPERATIVE PLANNING PROCESS

BARRY ESHPETER
JUDY GRAY

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Introduction

A BRIEF AND SELECTIVE (perhaps even *slanted)* HISTORY OF SCHOOL LIBRARY PROGRAMS FROM ROUGHLY THEN TO APPROXIMATELY NOW

While there has been considerable debate as to whether there is, or should be, a school library curriculum, it is generally the case that where there is a school library there is a form of library "program." The library program of any school can be regarded as the sum total of library-related activities engaged in by the teacher-librarian, teachers and support staff and is measured by the resultant experiences and services provided to staff and students. The program is generally interpreted on a site-by-site basis, usually evidencing district or perhaps even provincial and national overtones and guided by some unstated, but commonly understood, conceptualization or philosophy of program. Underlying the successful library program is active and visible school-based administrative support.

The Traditional School Library Program Paradigm

Developments within school libraries in this country have been guided by one rather pervasive and somewhat persistent conceptualization of program. It is an interpretation which evolved in the 1960s and which held sway well into the '80s, surviving still in the minds of many and the practises of some. This paradigm suggests that, besides the host of administrative duties that attend the role of teacher-librarian, there is an instructional role as well - one which prescribes a major involvement in the areas of literature appreciation and "library skills" as well as a supportive role in the implementation of all other curriculum areas.

There has in recent years, however, been a steady erosion of support for this traditional model, based on factors that could be considered both historical and political in nature. The traditional model, as noted earlier, was a preliminary one, resulting from the evolutionary forces of a profession defining itself. Based in large measure on the public librarian concept, it represented an approach to librarianship based more on traditional roles, first loves, and perceived associations - the library's long love and relationship with things literary along with a less affectionate but nevertheless dutiful association with the things of information - than a response to identified societal and educational needs. Indeed, early school library programs represented a by and large successful transplant of the public library concept into the school setting, the need to impart such affections as the love of literature now enabled by the most ideal of circumstances - a captive audience.

The '60s represented a period of growth and grace for this new profession, the idea of resident libraries and librarians a form of educational status symbol for many school districts. There was little thought that the profession would ultimately need to consolidate its gains through the identification of an indigenous body of content and process, even though the period did give rise to a proliferation of scope and sequence charts from which the profession's importance to the educational world could be deduced (by the discerning deducer). And it was here in part that the politics of the profession initially failed.

Because these were generally affluent times for education, library programs were looked upon by those both within and external to the profession, somewhat benevolently and optionally, a bonus for those schools that had one but not a particularly grievous situation for those that didn't (a circumstance which prevails in about equal measure today). Assuming that there would be no end to the good times, or perhaps conferring institutional status on itself, the profession proceeded on the basis of good will, choosing not to, or often openly arguing against, the need to seek legitimization at a curricular level.

Interestingly enough, other foundling disciplines were, during this time period, more openly aggressive and political in seeking and ultimately achieving curricular recognition, a status once obtained, we might note, almost impossible to lose. The consequence of this political inactivity was ultimately to have a greater impact on school library programs and on teacher-librarians than on school libraries (for example, although almost all schools in Alberta currently have libraries, only one in four school libraries is staffed with a teacher-librarian). Lacking curricular validation, or much by way of sponsorship or support at the provincial level, and having failed to consistently demonstrate that the presence of a teacher-librarian made a significant educational difference, the program began to come under increasing pressure from cost conscious administrators and school districts.

The Decline of the Traditional Paradigm

By the late '70s, one of the major program elements, the literature component, had begun an inexorable drift towards the language arts curriculum, where literature-based programs and the whole language experience were seen as symbiotic partners. The loss of the teacher-librarians' fundamental involvement in (if not ownership of) literature was to consign the profession to an essentially supplementary or support role in what had heretofore been an area of vital involvement and one in which teacher-librarians had been virtually conceded deed and title. In part, this territorial annexation points to the vulnerability of a program lacking a universally recognized program base and with uncertain curricular credentials.

In removing this central piece, the burden of proof for the library program now lay squarely on the "skills" component, a component regarded by many teacher-librarians as the lesser of the parts and one already suffering from a chronic undervaluing of its chosen content and its isolationist approach. Thus as economic affluence was replaced by restraint and as other new and more insistent programs and technologies began to compete with established programs for recognition and dollars, library programs continued to be devalued.

The Methodological Shift Towards Cooperative Planning

Whether as a consequence of the need to resist the several forces bestirring themselves against the profession, or simply the product of the natural developmental process, the late '70s registered the first significant shift away from the traditional paradigm and towards a powerful new integrating philosophy just then emerging in the literature. First expressed by Ken Haycock in 1978, the concept was that of the teacher-librarian as cooperative planner and joint implementer of curriculum. In this new role, the teacher-librarian, by virtue of a broad general background in curriculum, as well as a specialized knowledge of resources and of the planning process, would assist teachers in the planning and implementing of classroom-based units. It was an interpretation of the role of teacher-librarian that appeared to value the process of cooperative program planning almost as much as the teaching of library-related content. While the "library" was seen as having a moral responsibility for the development of certain information-related skills (the "program"), the cooperative planning philosophy suggested that the development of library skills was to occur within the context of jointly planned and implemented classroom units. Thus, as opportunities were perceived during the planning process to integrate skills seen by *both* parties as integral to their programs (e.g., the ability to alphabetize to the third letter) they were seen as occasions for instructional intervention by the teacher-librarian and, hence, for the advancement of the library's instructional program.

A common interpretation of the role, however, saw teacher-librarians, many of whom had been long denied access to mainstream instructional involvement, functioning almost on a co-opted basis and in a role fundamentally indistinguishable from that of the classroom teacher. The total involvement in the educational process that this interpretation represented, came quickly to be regarded as the ultimate definition of the role and marked the arrival of the teacher-librarian as an important educational player - a valued planner and teaching colleague.

Unfortunately, on too many occasions, the two programs - the library program and the classroom program - met at the planning table on unequal footings, the library program the lesser of the two and subject to the pervasive and mandated influences of the classroom program. It was a model that would (as did the traditional paradigm) work in the best of hands and in circumstances in which the teacher-librarian brought a strong sense of understanding and commitment to the library program thereby insuring the equal representation of library "skills" in jointly planned units. Since, however, the program as now defined was essentially premised on its methodology rather than its content, its means rather than its ends, it continued to lack a rallying point, an essential characteristic that would assign to it the inestimable power of being necessary.

It was, in any event, an important time for school library programs as it moved the profession strongly away from an isolationist approach to one of central curricular involvement. Again, however, as it represented a fundamental philosophical shift, it required a major adjustment by the profession and by educators generally. Asserting that the teacher-librarian's essential role was now to be that of joint planner and curriculum implementor rather than necessarily, a literature and "library skills" teachers, would require an accommodation that has to date not been totally understood nor fully realized.

Rather than representing a fundamental redefinition of program, the cooperative planning approach represented more of a methodological shift, although a significant one. Even though it came to be agreed in the library community that cooperative planning would be the methodology of choice, that cooperative planning and teaching were the means through which the objectives of the library program could be realized, library skills and literature programs continued to define the instructional parameters of the program. There was, as well, during the period of the late '70s and early '80s, an emerging political awareness based on the need to protect a profession and a program in decline. During the times of crisis that marked this period, the profession began to call upon a political weapon that has subsequently become uniquely ours . . . advocacy.

Advocacy

Advocacy, broadly defined, is a process in which opportunities are created to extoll the virtues of the library program. It is predicated on the belief that teachers and administrators do not understand the role of the teacher-librarian, this lack of understanding being causal to the decline of the program. The other likelihood, although less palatable, is that administrators and teachers understand the role well enough, but have not been entirely convinced of its relevancy. Regardless, advocacy is one of the most persistent strategems of school librarydom, a political artifact bespeaking a profession in regular need of asserting its relevance rather than daily demonstrating it and, in that demonstration, generating genuine advocates from within teaching and administrative ranks.

Despite the fact that advocacy has generally been ineffectual, it continues to be the profession's main political mainstay. Rather than going back to the kitchen to cook up a new dish, we tend to trot out new panegyrics extolling the tastiness of the old. In truth, what success the traditional program has enjoyed has for too long been dependent upon the general persuasiveness, personal virtues and program interpretations of the individual teacher-librarian, rather than on the program's fundamental merits. It has, therefore, required of educators a general acceptance of a program that was meaningful and dynamic only in the best of hands rather than an affirmation of a program without which, the education of the child would be centrally incomplete. The content and politics of school library programs need to be adjusted in order to be viewed in the larger light of societal needs, educational relevancy and, ultimately, curricular validation, rather than the tea party politics of advocacy.

It must be noted that the decline in support for school library programs evidenced in the last decade is not the result of an uncaring attitude on the part of the profession. The profession has indeed cared, has been dedicated, and has demonstrated great commitment to its beliefs. It could be accused only of being somewhat myopic. Rather than quitting the traditional paradigm or conventional politics for more radical but, hopefully, more productive alternatives, it has persisted in its pursuits. Thus as literature has shifted its primary residency to the language arts classroom and as pressures mount to integrate the technological artifacts of the information age into relevant instructional experiences, pressures mount commensurately to either redefine the role of the teacher-librarian or, as in the case of too many schools and school jurisdictions, to eliminate the position entirely. Thus we search for a productive new paradigm to guide the development and implementation of a program that should be vital to student growth in an era dubbed "the information age."

The Search for Alternatives

A search of the literature reveals a number of philosophies being proffered as alternatives to the classical paradigm. No one particular approach seems to have captured the affections of the populace, although each has its own group of adherents. Of these alternatives, the instructional design approach, which suggests that subject-based curriculum planning should be the central activity of the teacher-librarian, seems to be the most pervasive. This approach, which has its roots in the behaviourist school of psychology, represents a uniquely American interpretation of program. It is an approach, however, which despite more than two decades of development and very active sponsorship (primarily from the media community), has failed to gain widespread acceptance either from school library media specialists or from the teaching force generally.

The Instructional Design Alternative

The instructional design role, as characterized by such advocates as Phillip M. Turner, suggests that the primary role of the school library media specialist is the betterment of teachers and teaching through the application of instructional design techniques. Instructional design, simply stated, is a systematic planning process that can be applied to the development of an entire course of instruction, a unit of instruction, or even to the design of a single resource. And that is the end of the "simply."

Although it is a process unencumbered by any content other than that brought to it from a curriculum area (that which you are "planning"), it compensates by being process heavy. Common to the many iterations of the instructional design approach appearing in the literature, is the systematic analysis of all proposed learning tasks in order that they may be most thoroughly considered and effectively designed. Following in the footsteps of the instructional design process engages the planner in a complex of tasks, from needs assessment to goal setting, audience analysis to content specification, and onward through steps innumerable. Listing all of the steps, let alone engaging in the process, tends to arduousness of the first order. The intent is laudable, however, in that the enumeration and consideration of all of the essential steps of instruction - a leave nothing to chance approach - is difficult to disagree with. It is the authors' belief, however, that despite the obvious logic embedded in the instructional design approach, it is one which is unlikely to be widely adopted as a planning model at the school level. Instructional design as typically represented and conventionally understood may, unfortunately, be all too logical, linear, complex, unwieldy, and out of touch with the constraints of real world planning to gain the popular acceptance hoped by its proponents.

Further, instructional design is a philosophy which does not necessarily ascribe a teaching role to the school library media specialist, there being no identifiable body of content indigenous to the function. The instructional design approach is, rather, a process-based approach targeted at teachers and at the improvement of their classroom practise. A noble objective, surely, but one which treats the partnering process as more a mentoring than a collegial act. In that way it would seem to be less than egalitarian; the media specialist, possessing as it were, superior planning skills, called on to support the efforts of the classroom teacher through the on-going development of teaching units.

Hitching Our Hopes to the Thinking Skills Bandwagon

Much more recently, another philosophy, also American-based - the school library as thinking skills place - has entered the fray, it too hoping to take up residence within the minds of teacher-librarians and the programs of the school library. Wishing to capitalize on the current interest in programs of thinking skills and problem solving, advocates of this approach have suggested that such programs could logically reside within the instructional vacuums that currently exist within some school library programs.

In the thinking skills based program scenario, the teacher-librarian would be required to play a central role in the development of student thinking skills through activities that would be library-based and embedded in library-related events. It is an approach which, in our opinion, skirts perilously close to the truth. And yet, if we look closely, it is almost possible to see a cart slowly hoving into view, trailed by a somewhat confused and truculant horse. It is an approach which suggests that, in the world order, there is an acknowledged pre-eminence of thinking skills and strategies over information skills and strategies. We would prefer, instead, to believe that the majority of these thinking skills and problem-solving behaviours would be quite naturally elicited through the normal processes and events of an information-based school library program! Further, we are concerned by any program which has at its center, a potentially bandwagonish, de-contextualized, somewhat controversial and, quite possibly, short-lived concern for one particular aspect of the student's cognitive development.

An Information-Based Program Alternative

Thus as we observe the declining influence of the traditional paradigm and question the relevance of the Instructional Design and Thinking Skills alternatives, we will propose a paradigm based on one which has enjoyed increasing exposure and acceptance within the Canadian context. The generic model which we will advance is based on a model introduced by the Calgary Board of Education, one in which the authors were deeply involved in the writing, development, and implementation phases. It is a model which, we believe, offers direction to a profession seeking a more meaningful involvement in the educational process, defining many areas of opportunity in relation to the creation of information-literate students.

The Calgary Board of Education's Resource Center Program Model introduced in 1979, could well represent the first significant departure from the traditional school library program paradigm. It was then, and continues in many ways to be, unique in its representation of the school library program. The CBE model represents one of the first attempts to graphically portray the essential elements of a school library program, representing a major departure from the more common practise of verbally describing or defining program. Such definitions tend to be eloquent, vague and so motherhoodish as to be unarguably unarguable. Diagramatic representations, on the other hand, tend to be somewhat more unequivocal and in some ways more functional, short as they are on ambiguity. Risk resides in such explicit representations, however, for program dimensions are unambiguously announced and program objectives clearly defined, removing them from the deliberately fuzzy realms of definition that can at once protect and jeopardize any program.

Beyond its largely diagramatic representation, however, the Calgary model broke with tradition in other respects as well. The model suggested that the teacher-librarian's primary function within the school was not administrative nor clerical but, rather, instructional. It suggested further that this instructional involvement was not to be seen primarily in terms of the support of other curriculum areas, but in the pursuit of the library program's own instructional objectives. In other words, the library's instructional program was not to be defined simply by the needs of other school programs but to be seen as a unique program entity (Yes, Virginia, there is a *library* program). This is not to suggest that there were not many areas of overlap between classroom and library programs, but, rather, that the information well-being of students needed to be addressed systematically and holistically, encompassing the concerns of curriculum programs, but including many issues that seemed to be uniquely library or information based. It is an approach that suggests an equality of programs and an equivalency of planning, teaching, and evaluating responsibility.

Inherent in the model is the suggestion that the development of information skills and strategies should not occur in isolation. The attainment of information proficiency could not, it was felt, be accomplished apart from the context provided by curriculum-based research. Cooperative planning, then, was seen as the essential methodology for the attainment of the instructional goals of the library program.

A Generic Model

The model which we will propose is based on the original CBE model and, while philosophically consistent, reflects much subsequent developmental work. Among the differences, the original model proposed a three phase information cycle, each of the stages only superficially developed. The generic paradigm developed within this discussion expands the information cycle to five phases and identifies many of the sub components of each phase. Further, the concept of consultative services is replaced by the more common terminology of cooperative program planning. In other respects, however, the model reaffirms the basic structure of the original, representing more of a refinement and extension of that thinking than a radical reshaping.

While the majority of this document will be devoted to consideration of the generic model, it must be noted that, since the introduction of the first Calgary model, a number of other program models have appeared. In 1982, Ontario's *Partners in Action* was introduced and three years later, Alberta Education published *Focus on Learning*. In 1987, Saskatchewan Education introduced *Resource-Based Learning,* bringing to three the number of documents guiding library program development at the provincial and national levels. In addition, school districts such as the Vancouver School Board and the Winnipeg School Division #1 have introduced either library program models, or planning guides, to describe program direction and emphasis.

These models, whether exclusively of a "role-descriptive" nature (such as the Calgary and Winnipeg models) or of a combined "descriptive" and "phase" nature (Vancouver, Ontario, Saskatchewan, and Alberta), would seem to represent a uniquely Canadian contribution to school library programs standing in stark contrast to the many attempts, mostly American in origin (Turner being a notable exception - see page 24), to describe program primarily in verbal terms.

On the next several pages are examples of both approaches. The Baker approach, for example, characterizes program through a list of criteria, a not uncommon approach in the literature. In counter point, some of the more prominent Canadian models, and one American model, are profiled. This cross-section of examples, both verbal and "modeled," represents, in our opinion, a healthy diversity of approach to the issue of defining program and, ultimately, to developing information literate students. At the same time, many of these models acknowledge and promote the teacher-librarian's continued involvement in several traditional aspects of the school library program, in particular, those related to literary and cultural appreciation.

After slightly more than two decades of school library program development these models represent, in actuality, the first wave of descriptive modeling. Ultimately these first generation models will be superseded by more refined and insightful models which will inevitably reflect and incorporate the changing nature of information and our relationship to it.

DEFINITIONS OF PROGRAM

A Media Program Is . . .

Ruth Ann Davies . . . A developmental and operational plan wherein the building library media centre functions as a learning laboratory where the use of all media, print and non-print is purposeful, planned and integrated with the educational program and instructional processes to widen, deepen and personalize learning.

from *The School Library Media Program: Instructional Force for Excellence.* 1979.

• • •

Morris Freedman . . . an instruction, service and management system which is shaped by the school's philosophy, its learning objectives, teacher skills, the characteristics of learners, learning spaces, the curriculum and the organization of students for learning.

from *The Library Media Specialist in Curriculum Development.* 1981.

• • •

Emmanuel T. Prostano . . . patterns of interfacing among program components, e.g., people, materials, machines, facilities and environments, managed by a media professional who establishes and maintains relationships between or among the components.

from *The School Library Media Centre.* Third Edition, 1982.

• • •

C.S.L.A. . . . The role and responsibility of the school library lies in the development of resource-based programs that will ensure that all the young people in our schools have the opportunity to learn the skills that will enable them to become competent users of information.

from *Guidelines for Effective School Library Programs.* 1988.

• • •

A.L.A./A.E.C.T. . . . The mission of the library media program is to ensure that students and staff are effective users of ideas and information. This mission is accomplished:

- by providing intellectual and physical access to materials in all formats;
- by providing instruction to foster competence and stimulate interest in reading, viewing, and using information and ideas; and
- by working with other educators to design learning strategies to meet the needs of individual students.

from *Information Power - Guidelines for School Library Media Programs.* 1988.

Excellence In School Library Programs

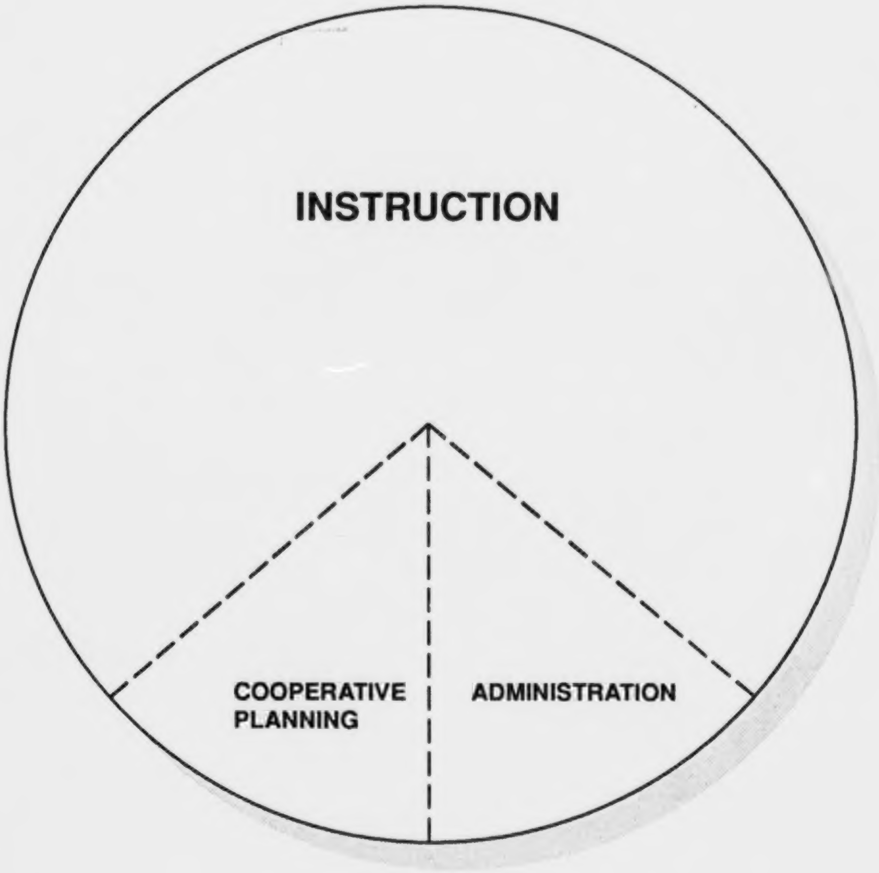
Philip Baker has identified 11 factors indicative of the successful School Library Program:

1. The exemplary program involves staff in ways that heighten their sense of personal and professional value.
2. Many exemplary programs involve a reward of one kind or another.
3. These programs address themselves to the development and learning of some fundamental learning skills.
4. Exemplary programs contain within them a shared sense of appreciation and encouragement.
5. Clear, specific, and agreed-upon methods designed to permit each individual to make a maximum contribution by working with others are in place in successful programs.
6. Built-in resiliency and flexibility characterize these programs.
7. Successful library programs can be adopted or adapted by others . . . they are models.
8. Exemplary programs establish a unique "personality" while being able to integrate into a larger program.
9. Wide staff and participant involvement in planning characterize the successful program.
10. The excellent program is one which serves a real need.
11. Successful library programs have goals to which they are committed and by which they expect to be measured objectively.

Phillip Baker, *School and Public Library Media Programs*. 1977.

THE SCHOOL LIBRARY PROGRAM

A GENERIC MODEL



CBE RESOURCE CENTER PROGRAM

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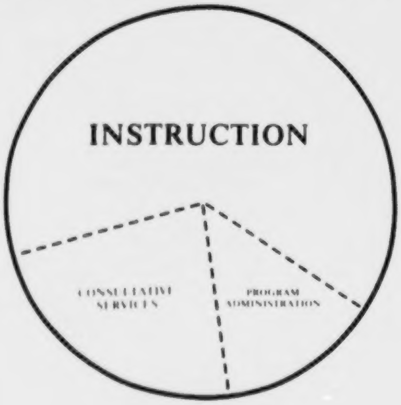
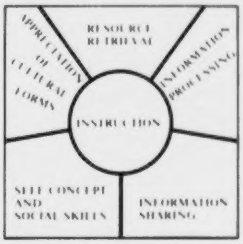
RESOURCE PROGRAM COMPONENTS



INSTRUCTION

Those activities involving direct interaction between the librarian and learner in a formal or informal instructional setting



RESOURCE RETRIEVAL
A knowledge of available resources, the ability to locate and obtain those resources, and the skills to use those resources for information or enjoyment

INFORMATION PROCESSING
An ability to extract and acquire information and/or enjoyment from resources through viewing, listening, reading, or tactual/kinesthetic experiences

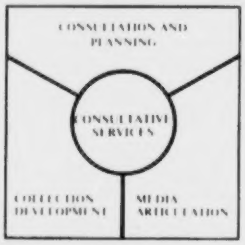
INFORMATION SHARING
An ability to organize acquired information into new and meaningful patterns and to share knowledge in a variety of ways

SELF CONCEPT AND SOCIAL SKILLS
Those skills that enable a student to function responsibly and effectively in a variety of individual and shared social settings

APPRECIATION OF CULTURAL FORMS
Those activities that develop appreciation for the creative nature of mankind through exposure to appropriate and significant works of literature, art, music, drama and other cultural forms

CONSULTATIVE SERVICES

The furtherance of the school's instructional program through direct consultation and discussion between the librarian and teachers regarding program planning and implementation, location and selection of materials and equipment, and the interchange of professional information and expertise



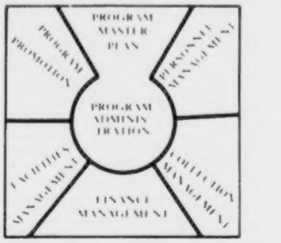
CONSULTATION AND PLANNING
The process through which the teacher librarian and classroom teachers cooperatively identify and evaluate school, system, and community resources and through which the school resource center program and the school's curriculum are furthered through joint planning and implementation, including cooperative teaching

MEDIA ARTICULATION
The function of the teacher librarian as a facilitator of media based professional development activities and promoter of the school's resource services

COLLECTION DEVELOPMENT
The activities through which the school's resource collection is cooperatively selected and developed by the teacher librarian and classroom teachers in accordance with a cooperatively developed selection policy

PROGRAM ADMINISTRATION

Those fundamental administrative and managerial functions that result in the effective operation of the library program and the integration and coordination of all its services into the ongoing instructional program



PROGRAM MASTER PLAN
The key element in the development of a successful resource center program is the presence of a Program Master Plan. The plan should include
  Cooperatively developed goals and objectives
  A program of formal and informal needs assessment including identification of learning styles
  Goal based budget planning
  A comprehensive program evaluation plan

PERSONNEL MANAGEMENT
The assignment of technical and clerical duties in order that daily routines contribute to the achievement of the stated library goals. Includes deployment of library clericals, parent volunteers, and student help

COLLECTION MANAGEMENT
Those activities related to the selection, acquisition, circulation, maintenance and weeding of all materials in the resource center

FINANCE MANAGEMENT
Those bookkeeping tasks required to account for monies spent

FACILITIES MANAGEMENT
Those tasks related to organizing space, arranging furniture, scheduling facilities, etc., so as to use resource center space most flexibly

PROGRAM PROMOTION
Communication with administration, classroom teachers and students to encourage voluntary and maximum use of the resource center, e.g. book talks, bulletin board displays, promotions, and contests

A PLACE TO BE

Students and staff frequent a resource center for many different reasons. Dominant among these are two that could be regarded as particularly significant. The first of these is the need for information — information as demanded by the school's curriculum or as motivated by individual interest. These needs are served through provision of adequate and suitable resource collections balanced to reflect a broad range of informational needs and capable of accommodating a wide diversity of learning styles and preferences.

Similarly, the resource center is a place of enjoyment — enjoyment in the resources located there and enjoyment in the very place itself. The type of enjoyment to be found in a warm welcome from someone who is genuinely pleased to see you. The enjoyment derived from finding a soft chair and "good friends", the pleasure in discovering things whose only function may be to entertain. The excitement of finding a treasure trove of fact and fiction, written and recorded, real and unreal; a place which provides the freedom to read quietly, listen loudly (but privately), to sit askew and view askance. A place to embark on many different journeys of enjoyment and discovery . . . A place to be!

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VANCOUVER SCHOOL BOARD
SERVICES OF SCHOOL RESOURCE CENTRES

A PLANNING GUIDE

PHASE III
CURRICULUM IMPLEMENTATION
Curriculum Planning and Development
Cooperative Teaching
Professional Development Services to Teachers

↑

PHASE II
CURRICULUM ENRICHMENT
Promotion of Materials and Services
Guidance for Readers, Listeners, Viewers
Information Services
Design and Production of Materials
Cooperation with Outside Agencies

↑

PHASE I
CURRICULUM SUPPORT
Administration of Resource Centre
Selection of Materials
Acquisition of Materials
Organization of Materials
Circulation of Materials

Developed by Ken Haycock © 1973
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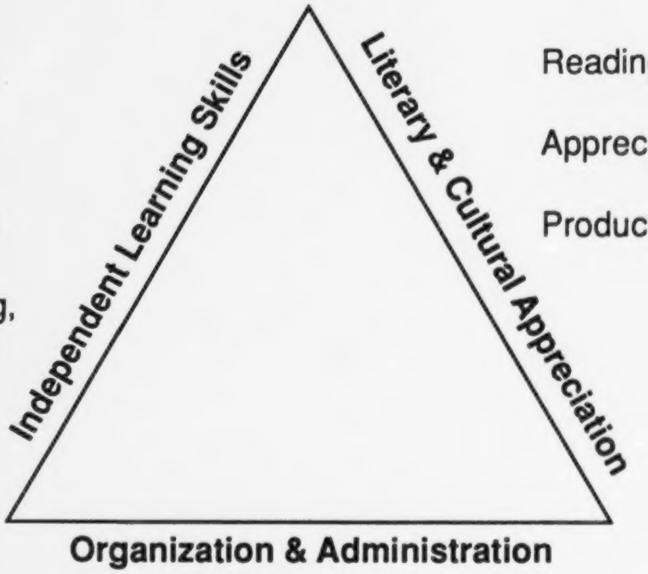
WINNIPEG MODEL

COMPONENTS OF THE LIBRARY MEDIA PROGRAM


Independent Learning Skills
Literary & Cultural Appreciation
Organization & Administration

- Locational Skills
- Analytical Skills
- Comprehension Skill
- Recording, Reporting, Demonstrating Skills

- Reading Guidance
- Appreciation Skills
- Production of Language

- People
- Budget
- Facilities
- Resource
  - Commercial
  - Production

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ONTARIO MINISTRY OF EDUCATION
PARTNERS IN ACTION

The Role of the Teacher-Librarian

Consultation
The teacher-librarian is involved in the identification of teaching and learning strategies, working with teachers and students in the selection, production, and evaluation of learning resources, and serving as a consultant in planning effective learning activities.

Curriculum Development
The teacher-librarian participates as a partner in planning, implementing, and evaluating curriculum.

Instruction
The teacher-librarian is a teacher who works co-operatively with other staff members and who shares the responsibility for teaching learning skills.

Selection of Learning Resources
The teacher-librarian matches learning resources to user needs. This involves keeping up to date on new learning materials and equipment, as well as on the potential of modern technology to improve access to information. The selection of materials to be purchased is done co-operatively by the teacher-librarian and classroom teachers.

Management
The teacher-librarian, in consultation with the principal, establishes, implements, and evaluates library resource centre objectives. This involves the administration of such support elements as timetabling, budgeting, and the supervision of library staff. The teacher-librarian also develops access and delivery systems for resources and equipment and establishes interlibrary loan systems for sharing resources.

Program Advocacy
The teacher-librarian has a responsibility to interpret the role of the library resource centre in the teaching and learning activities of the school to the principal, teachers, supervisory officers, parents, trustees, and students.

Partners in Action: The Library Resource Centre in the School Curriculum
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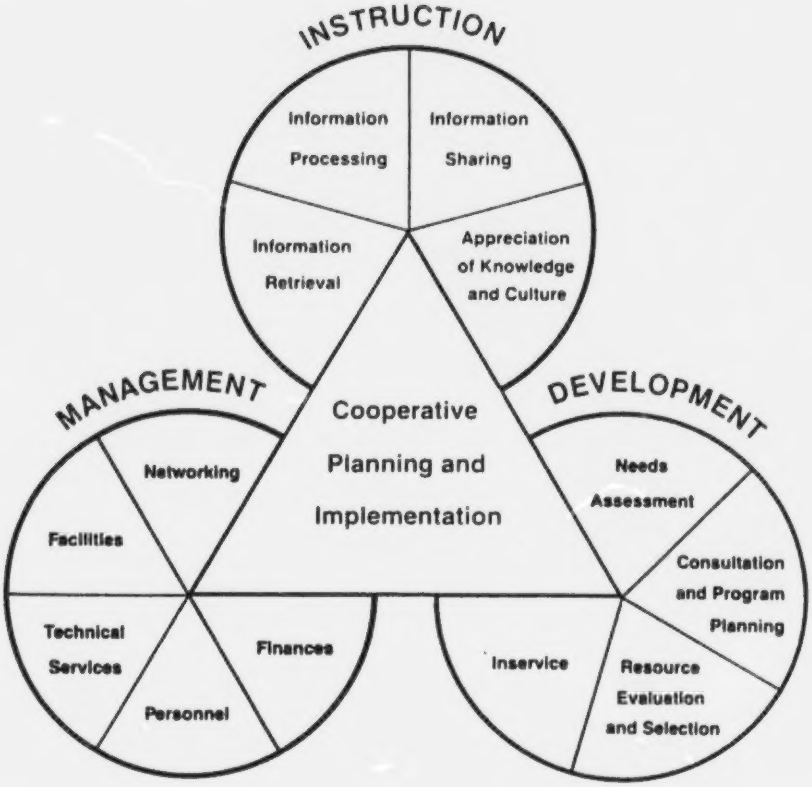
ALBERTA EDUCATION
FOCUS ON LEARNING:
AN INTEGRATED PROGRAM MODEL FOR ALBERTA SCHOOL LIBRARIES



Focus on Learning
Alberta Education, 1985

RESOURCE-BASED LEARNING
Policy, Guidelines and Responsibilities for Saskatchewan Learning Resource Centres

Program

An effective resource centre program designed to achieve the *Goals of Education (1984)* is essential to the total school curriculum. Program requirements are determined by and dependent on personnel, budget, facilities and collections. The program offered in any individual school should reflect the needs, expectations and goals of both the school and the division.

	Phase 1	Phase 2	Phase 3
Curriculum Support	Basic support is offered to the curriculum through the development of a collection of resources and provision of services which ensure access to the resources	Programs and services are provided which lead to the integration of resources with the teaching program	Resource centre materials and programs are effectively integrated with the teaching program, including curriculum planning and development.
Library/ Research Instruction	Information skills instruction for students is provided in response to student need	Information skills instruction is integrated with the instructional program	Information skills are integrated with the instructional program in a systematic and developmental way through all grade levels.
Co-operative Planning	Programs that encourage the use of resources are provided to groups and individuals.	Co-operative planning occurs between teacher and teacher-librarian to encourage the development of resource-based teaching and learning	Instructional outcomes are achieved through co-operatively planned and implemented resource-based programs.
Resource-Based Instruction	Materials to support in-class instruction are provided	Resource-based instruction is provided by teacher and/or teacher-librarian	Teacher and teacher-librarian share teaching role as a result of co-operative planning
Inservice	Teachers and teacher-librarian share information about materials and services	Inservice is focused on co-operative planning	Formal inservice programs are established to enhance curriculum delivery through co-operative planning and teaching
Media Literacy	Instructional program is enriched through resource centre-initiated programs which provide reading, listening and viewing guidance to meet the informational needs of individual students	Expanded support is offered to the instructional program	Enhanced support is offered to the instructional program
School Based Library Policy	The resource centre program is based on provincial and divisional policies	The resource centre program is based on policies developed at the school level	Resource centre policy, programs and services are subject to continuing development and evaluation
Program Advocacy	Teachers and students are encouraged to make effective use of the resource centre and its materials	The role of the resource centre is effectively articulated to the school and community	A planned public relations program is initiated, through which the resource centre is advocated as an essential element in the teaching-learning process.
Technical Services	Basic technical services are in place (e.g. circulation, cataloguing, processing, etc.)	Technical services are expanded to serve program needs	Technical services become increasingly sophisticated in response to program needs
Co-operation with Other Agencies	External resource centre-related programs, services and resources are part of the resource centre program.	Informal co-operative arrangements are established, which outline the use of resource centre programs, services and materials	Formal reciprocal agreements with outside agencies are established to outline the use of resource centre-related programs, services and materials.

Note:
The terms "expanded" and "enhanced" are used in several places in this document when referring to aspects of the resource centre program. "Expanded" generally means a growth in quantity; for example, the program may reach more students or teachers, or more teacher-librarian hours may be available. The term "enhanced" usually refers to growth in the quality of the program.

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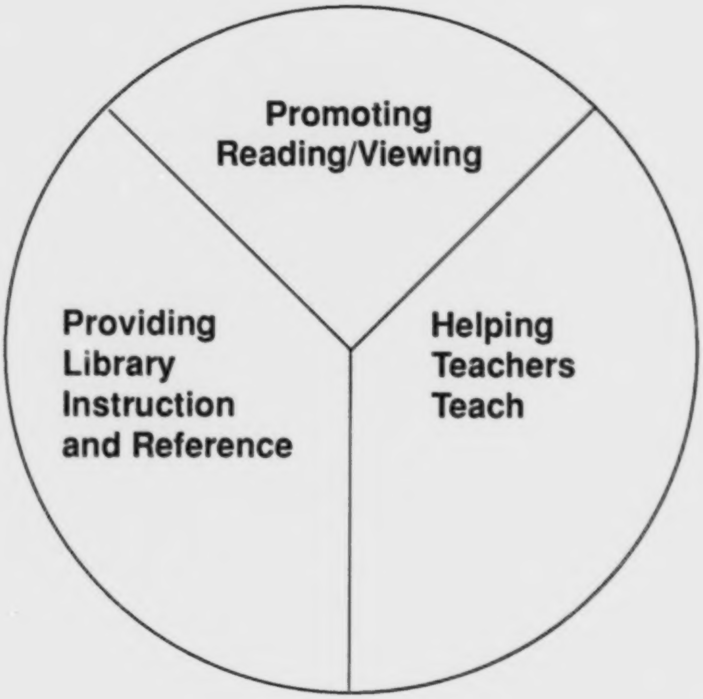
A SCHOOL LIBRARY MEDIA SPECIALIST'S ROLE


Promoting Reading/Viewing
Providing Library Instruction and Reference
Helping Teachers Teach

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Helping Teachers Teach

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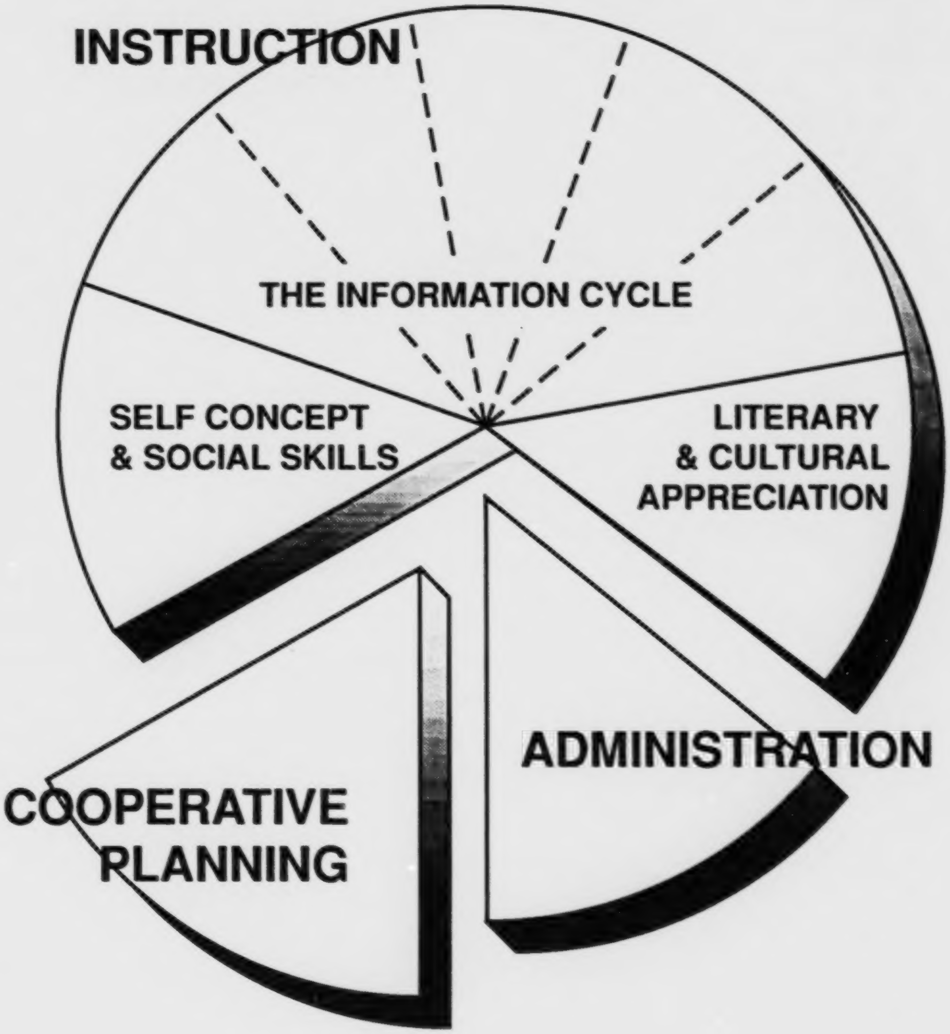
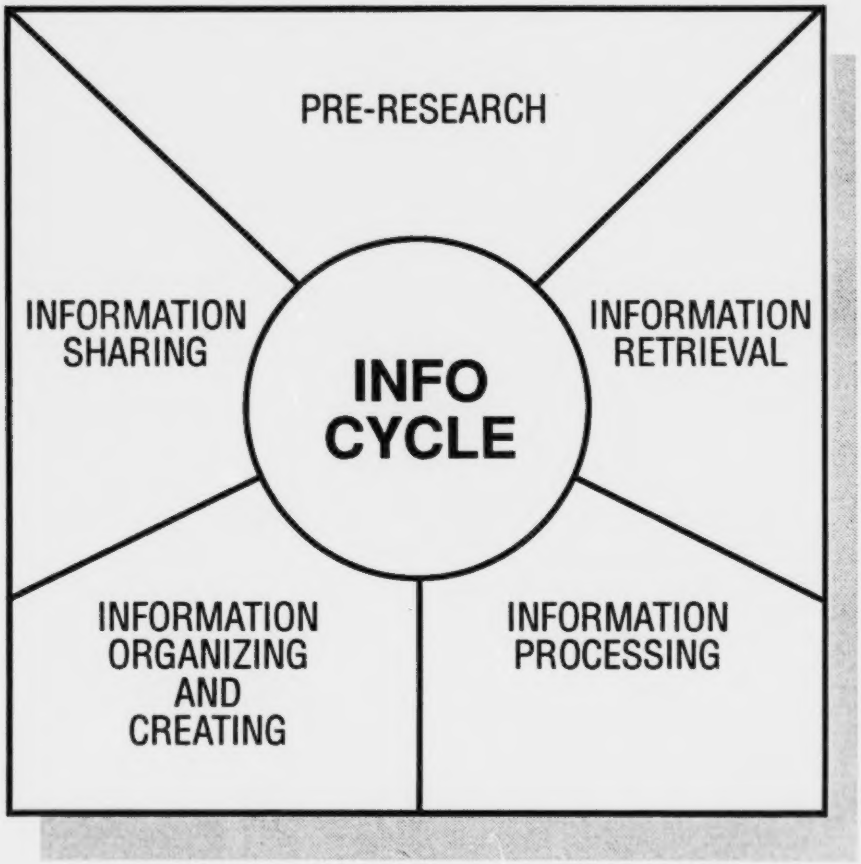
2

The Instructional Program

THE GENERIC MODEL HIGHLIGHTING THE INSTRUCTIONAL COMPONENT



THE INFORMATION CYCLE



SCHOOL LIBRARY PROGRAMS - THE INSTRUCTIONAL COMPONENT

An Overview

At the heart of the generic program model is the *Instructional Component.* "Instruction" is defined as those interactions between the teacher-librarian and learner occurring in either a formal or informal instructional setting. These interactions may be one to one, one to small group, or one to large group and include all types of student contact from individual reader and researcher guidance to large group instruction. It is our belief that the instructional role represents the most significant work of the teacher-librarian. It is this teaching contact, the direct involvement in the development of skills, strategies and appreciations, that distinguishes the potential of the role of the teacher-librarian from that of the library's non-teaching personnel. It is this singular function that ultimately animates the library, making it less a reactive repository of information and more a proactive force for the introduction of student-centered, information-based, learning experiences.

The Instructional Component of the library program is comprised of three distinct areas 1) instruction leading towards the development of self-concept and social skills; 2) instruction leading towards the development of information-related skills and strategies; and 3) a program of opportunities, both passive and active, directed towards student growth in the appreciation of literature and other cultural forms. While each of these areas is important and each will demand that a school give consideration to its relative priority within the instructional schemata, the focus of our discussion will be the information segment of the program.

Teacher-Librarians as Information Specialists

It is our belief that the role of the teacher-librarian must increasingly reflect an involvement in the processes of information - that teacher-librarians must become the information specialists within the school. The involvement of teacher-librarians in several information-related processes is already well established, particularly in those areas related to information retrieval and, to a lesser extent, the sharing of information. We will, however, argue for an expansion of the role of the teacher-librarian into the totality of the events surrounding the research process. These events we have labelled the *Information Cycle,* a succession of learning events and instructional interventions designed to promote student success in the research process.

The Information Cycle

The Information Cycle is not new, nor is it something that has been invented; rather, it has been discerned, and upon due reflection and consideration, categorized and named. Every student who has engaged in research has travelled its paths. Each has done so with greater or lesser knowing of its sureties and vagaries, its stepping stones and handrails, its pitfalls and chasms, with greater or lesser learning the natural consequence of this knowing.

We have, after due reflection and consideration, broken the *Information Cycle* into five major phases - *Pre-Research, Information Retrieval, Information Processing, Information Organizing and Creating* and *Information Sharing*. As with all attempts to categorize natural events, especially those that are inherently and essentially organic, the boundaries drawn around these categories may appear somewhat arbitrary and their sequence far more linear than they indeed are. Others, in examining the same processes, might argue for a different ordering and, even, a different configuration, for to suggest that these categories are affixed to some ultimate truth would be but wishful thinking. What benefits most from this form of analysis, however, is the knowledge that, regardless of how they are configured or named, there would seem to be some major identifiable categories of activity within the research process that need systematically to be addressed.

Additional analysis of the five phases gives rise to numerous sub-species of activity within each phase that begin to sum to the totality of the research event and which point again to the many processes that need systematic attention. The complete enumeration of the events of the cycle, both large and small, gives evidence as to the large number of decisions, and the high degree of knowledge required of the decision maker, in circumnavigating the cycle. At the same time, we begin to sense the depth of partnership that needs to be forged between classroom teacher and teacher-librarian in order that students successfully engage in research and reporting.

PHASES OF THE INFORMATION CYCLE: AN OVERVIEW

The Information Cycle begins at a stage we have dubbed *Pre-Research*. It is at this stage that the foundations for conducting a successful research project are laid. In its most complete rendering, it is a very comprehensive phase that includes such activities as topic generation and clarification, question development and categorization, the development of a "considered" information gathering plan and, perhaps, a bail-out clause (what happens if your original plans are shot down in flames?).

Information Retrieval is the second step in the process. The term is typically used to refer to the application of differentiated strategies in locating resources relevant to the information need, as well as to those processes directed towards locating information within the resource (i.e., using tables of contents, indexes, skimming and scanning).

Once sufficient resources have been assembled, the student enters the *Information Processing* phase, a series of transactions between the student and resources during which the student acquires information about his topic. As part of this phase the student adds the newly acquired information to either internal (cognitive) structures and/or to external structures (such as Data Banks) there to be further analyzed and subsequently dealt with.

Ultimately this new information is synthesized and reshaped by the student, finally being expressed as new information (and even, at times, knowledge). This phase, termed the *Information Organizing and Creating* phase, is one in which reports are drafted and redrafted and in which supporting materials are developed and organized as the student moves towards completion of a finished research project.

The final phase of the Information Cycle, aside from evaluation, is the *Information Sharing* phase. By now the finished product(s) will be in hand and ready to submit to the evaluators, be they teachers, or students, or a combination thereof. Though the products be finished, final assembly may still be required, the actual presentation to an audience perhaps dependent upon the coming together of several pieces - spoken words with projected visuals for example. Information Sharing refers to the actual events surrounding the presentation of information to an audience and includes protocols and techniques for both presenter and audience.

On the next few pages, these five phases of the *Information Cycle* are examined in more detail. Under particular investigation will be the issue of *student information strategies,* an approach to instruction which we regard as an essential forward step in thinking about the nature of instructional activity within the school library program.

THE DEVELOPMENT OF STUDENT INFORMATION STRATEGIES

> ***Strategy: A systematic method of solving an information-related problem based on a thorough knowledge of choices and the requisite skills to action those choices.***

When students arrive in the library on an information-related mission (whether for enjoyment or for intents more "serious") they invariably bring with them an assortment of problem-solving behaviours or *research strategies*. The kinds of strategies they bring, as well as the efficacy of those strategies, is dependent upon a number of factors including the number of past experiences in the library and the nature of those experiences. Students with little previous experience in locating and handling information might be expected to have strategies that are in some ways incomplete or inappropriate. Those students with considerably more background and/or practical experience could be expected to have more efficient and more complete search strategies provided, that is, that *strategies,* as distinct from *skills,* have been the essential focus of instruction.

Skills as a Fundamental Component of Student Information Strategies

For many years (most years in fact) those of us in school libraries have laboured under the belief that the teaching of skills would lead logically to the development of strategic thinking and problem-solving behaviours. It was thought that if we gave students the skills - i.e., that they could alphabetize, use the card catalogue and the periodical indexes, and understand the Dewey decimal system - that they could, and would, automatically engage in systematic and efficient problem-solving behaviours.

Unfortunately, this seldom seems to be the case in the real world. In studies conducted with students in our system, we have discovered that even where students come from situations that could be regarded as exemplary in terms of "skills" teaching, there is little evidence to suggest that they have consistently acquired appropriate research strategies. Even though these students are well schooled in such basic matters as card catalogues and alphabetizing, they demonstrate only minimal success (both in terms of results, and in terms of efficiency in obtaining those results) in an "applied" setting.

Observing the Strategies of the Young Researcher

The search strategies of too many elementary students are, then, relatively easily discerned, tending not to reflect the many hours of basic training in "finding things" that they are likely to have received. Student strategies tend to be somewhat limited, falling into one of two rather similar and somewhat narrowly defined patterns. Our testing revealed that almost without exception, and regardless of topic, students begin at the card catalogue. Depending on their success there, they may proceed to the encyclopedia. By this time their strategies, if not their persons, have been exhausted. Other students of a somewhat more resourceful persuasion, may make their second stop the teacher-librarian, generally a fail-safe technique. These two strategies are observed again and again - undifferentiated, linear, and lacking in both the knowledge and application of many previously "learned" information sources and routes.

The problem would seem to be that students, even though instructed in *how* to use a variety of research tools - magazine indexes, poetry indexes, specialized reference tools, card catalogues, and such - do not necessarily know *when* to use them. They have been given the skills to use the various tools but have not been provided with a "strategic basis" for knowing *when* to use *which* tool to most quickly effect a solution to any given informational need.

Thus, as we examine but one phase of the information cycle, the *Information Retrieval* phase, we can identify certain key elements of a student strategy that need to be in place to enable students to successfully engage in this aspect of the research process. These elements include:

- Knowledge of key information *Sources* or *Directories* such as the card catalogue, periodical guides and encyclopedia indexes, plus the requisite skills to use them.

- The ability to select *Information Directories* appropriate to the information need.

While many school library programs have had as a central teaching focus the development of student information *"skills,"* it is our opinion that *"strategies,"* the problem-solving behaviours required of students in all phases of the research process, have not been as thoroughly considered. It seems that only now is the concept of strategies undergoing any serious thought or development. It is a concept, however, which underlies our thinking in respect to all phases of the information cycle.

I. PRE-RESEARCH - PHASE ONE OF THE INFORMATION CYCLE

The teacher-librarian is, unfortunately, all too frequently the last to know! The first clue is often the buoyant sounds of enthusiasm careening down the corridors, an auditory scouting party preceding them by not much more than a moment's notice. They arrive, teacher dispensed topics and questions clutched to hand, high hopes and expectancy rates clutched to heart. Their's is the search for an informational holy grail conducted with the surety and confidence of the eager but soon-to-be-disenchanted. The object is, after all, to find the information that has been hidden in the library by the teacher-librarian. To add to the challenge the teacher-librarian, obviously a fun-loving person, has invented obstacles to the quest - alphabetizing challenges, secret codes, hundreds of different drawers, crevices and likely looking places in which to seek this information. Alas, for many students, this experience is more likely to lead to the discovery of informational black holes than to holy grails.

Fortunately, scenarios such as this are occurring with far less frequency as teachers begin to appreciate what teacher-librarians have always known - the advantages of adequate class preparation prior to the research event. Increasingly in fact, they wouldn't leave home without it. As a consequence, more and more classroom time is being spent in the clarification of topics, the generation and categorization of questions (insuring a measure of both understanding and ownership) and in the discussion and explanation of the expected end-product.

Thus it is that the *Pre-Research* phase has been proposed. As developed here, it encompasses a particularly critical series of events on which the successful outcome of research is predicated. It is, in a sense, a complete overview of the research event, designed to leave in its wake, a residue of student preparedness for the processes at hand. This phase includes:

1. ***A decision on the research topic.***
2. ***Clarification of the topic or of the research issue or focus.***
3. ***Determination of students' prior knowledge.***
4. ***Development of questions to be answered, discussion to be developed, or issues to be resolved.***
5. ***Organization of questions and issues into related categories.***
6. ***Decision on the end-product.***

7. ***Decision on the research methodology to be employed - from focused research using limited resources to open-ended research.***

8. ***Review of other steps in the Information Cycle including consideration of the information processing, synthesizing, creating, and sharing strategies to be employed.***

II. INFORMATION RETRIEVAL - PHASE TWO OF THE INFORMATION CYCLE

Information Retrieval Defined

Information Retrieval refers to the student's ability to identify and use the library's informational *sources* (or *directories,* to use the current computer terminology) in order to locate relevant information on a research topic. As much as we may regard it as the essence of the research process and the nadir of the teacher-librarian's instructional role (teaching students to find things is, after all, a time honoured tradition), it is a step that, in actuality, is frequently omitted. There are many occasions when the development of a report is seen to be slowed by requiring students to locate their own information. Instead, the information is given away, dispensed through learning centers, textbooks, handouts or collections of pre-selected resources requiring only that the student be able to locate information within the resource.

Open-Ended Research

The discussion developed on the next few pages is related to an information retrieval process that could be characterized as open-ended. This term may, again, be used in a relative way, for open-ended research may mean anything from "find the one best resource," to the typical interpretation of the term "locate as many resources and as much information in as many formats as possible." Both ends of this continuum however find their origins in the "let the students find it themselves" school of thought - a concept we thoroughly endorse while remaining cognizant of classroom constraints and pressures. Unfortunately, as the student's education proceeds, the number of opportunities to practice open-ended research seem to diminish, denying many high school students about to enter the work place or new educational environments, the opportunity to develop the abilities that will serve them so well as citizens of an information drenched society.

The Three Components of an Information Retrieval Plan

If, in fact, students will be regularly required to find their facts on the information open market using sources both within and external to the library, a vital occurrence prior to the research event and one almost essential to its success, is the development of an information retrieval plan. Even classes that are well rehearsed in the nature and objectives of their research can spend as much as eighty percent of their time in pursuit of information if certain vital areas of the information retrieval process have not been attended to early in the research process. Without appropriate advance preparation, research can appear to be a process strictly for the lucky (and lucky indeed are those who can avoid it).

The development of an *Information Retrieval Plan* represents, in many ways, little more than a hard copy version of the mental processes, often unacknowledged, that those seeking information would typically engage in. Developing a plan brings many of these processes to a conscious level necessitating consideration of such issues as:

1. The development of a *prioritized list* of *sources* appropriate to the topic and to it's *research category.*

2. A listing of possible *subject headings* under which to begin to seek information on the topic or subject.

3. A consideration of *key words* to be used while skimming indexes, tables of contents, or, indeed, the contents of a resource itself.

Step One: Developing a Prioritized Listing of Sources

The first step in the development of an Information Retrieval Plan should be the creation of a prioritized listing of information sources appropriate to the research topic. Generally, when asked to create such a list, students will reply with a complete accounting of all the library words they can think of, randomly generated, and with little thought as to the possibility, even likelihood, that distinct and very different avenues of research may exist. Lists such as the following typically ensue:

- *Books*
- *Filmstrips*
- *Field Trips*
- *Card Catalogue*
- *Magazines*
- *Encyclopedias*
- *Film Catalogues*
- *Interviews*

In this list we see an eclectic mix of *sources* - those tools such as the Card Catalogue and Film Catalogues that direct users to information - and the *resources* themselves - the books, filmstrips and magazines containing the actual information. Further, we see within this list, information sources that are external to the library and which, in some cases, represent primary sources; things like field trips and interviews. In order to generate and prioritize a more appropriate listing, these students will need to begin to differentiate between such things as *sources* and *resources*, *primary* and *secondary* sources, and *internal* and *external* researching.

One of the most significant keys to the development of a research plan is, however, the ability to assign topics to a *research category*, an event which recognizes that certain sources are more likely to be useful than are others for any given research assignment. In fact, for the most part, the entire range of possible research topics can be seen to cluster into but a few unique categories. We have tentatively established a number of these categories including Biographical, Geographical, and Topical - categories which suggest unique research routes that would be generally appropriate within that category.

The Concept of Research "Families" or Categories

Essential to the student's ability to develop an information retrieval plan is the ability to devise a search strategy appropriate to the topic and to the *research category* in which the topic resides. For example, it is hoped that a student would employ quite different, but equally suitable strategies, when faced with finding information on such varied topics as:

- *Wayne Gretzky*
- *The Commonwealth Games*
- *Spiders*
- *William Shakespeare*
- *Brian Mulroney*
- *Ethiopia*
- *Dinosaurs*

Obviously, each of these topics belongs to a research family or category and each suggests, therefore, a particular complement of sources to consult and a more or less appropriate sequence in which to consult them. For example, someone looking for information on Wayne Gretzky might begin with the telephone book (if they lived in Los Angeles). Or they might begin with hockey cards, or with a newsstand or bookstore. Library research on Wayne Gretzky, on the other hand, might begin with the periodical index and then proceed to the vertical file, or to a biographical source such as *Current Biography,* or to the card catalogue. The decisions made and steps taken by the student constitute his or her "strategy" and hopefully will represent a considered and efficient method of obtaining information on the subject.

It is important to note that student "strategies" for locating information will be no more inclusive than their working knowledge of the more significant informational sources or directories. If students have not been instructed in the use of *Current Biography,* for example, it is unlikely to be part of their 'search' strategy. Nor is it enough to expect that a single exposure to a specialized reference work will be sufficient to incorporate this resource into the student's repertoire. The development of specific strategies requires considerable repetition and reinforcement (much in the same way that the solving of quadratic equations requires considerable repetition and reinforcement).

Category Specific Information Retrieval Strategies

Each topic, then, whether it be a *Great Gretzky* or a *Great Britain* suggests a search strategy unique to the research category in which the topic most naturally resides. Thus, the problem of finding information on a Gretzky would, for the student with an appropriate research background, prompt the activation of a category-unique strategy quite different from that employed for locating information on a Great Britain, but very similar to that employed for any other high profile contemporary figure. It is this use of category-specific and category-appropriate research routes that both underlies and illustrates the concept of strategy. While the application of skills is important, it is the activation of the problem solving behaviours embodied in the concept of strategies that will ultimately result in successful research experiences.

The concept of research categories is one that portends a certain degree of utility in terms of understanding the process of information retrieval. We suggest that the notion of *research categories* permits us to see information retrieval not as a never ending succession of options but, rather, as a series of relatively easily discerned, if not mastered, patterns - each pattern specific to, and generally reliable within, a particular category of research. As students master these patterns, we would suggest that they have developed *category-specific retrieval strategies,* a process we would label "differentiated strategy development."

Some Suggested Research Categories

- *General Works* - this category spans many of the most frequently encountered research topics including animals, dinosaurs, and space. While there are variations, the research pattern for each of these topics tends to be somewhat uniform.
- *Biographical* - rock, TV, sports, and political and historical personalities.
- *Geographical* - geographical research, as well as being a distinct category of research, is often central to the complete understanding of other topics and issues.
- *Topical* - issues that are of a current and perhaps controversial nature - aboriginal rights, sexually transmitted diseases, drug and alcohol abuse.
- *Consumer Related* - the student as a consumer.
- *Discipline Specific* - law, medicine, education, etc.

As noted earlier, each of these categories of research suggests a particular group of information sources which should be generally reliable within that category. Each category suggests a unique search pattern which is in some ways different from any other, requiring the use of particular sources in order that success is achieved in information gathering. This process of pattern acquisition, or strategy development, is typical of the processes we believe need to be emphasized in programs of information instruction.

Knowledge of these various strategies should be reflected in the student's information retrieval plan. Since the *general works* research pattern is fairly common, it is suggested that you begin there, providing students multiple opportunities to learn and reinforce this particular information retrieval strategy before moving on to other categories of research.

Other Factors Influencing the Listing of Sources - The Influence of Time and Place

While the *category* of research is significant in determining an appropriate information retrieval strategy, two other factors may have a profound influence as well, these being the issues of *time* and *place*. Consider the difference in strategy required for locating information on a *contemporary* biographical figure as opposed to an *historical* one. The sources consulted are likely to be considerably different. Students will need ultimately to factor in the following considerations when devising a retrieval plan:

- The ***date*** or ***time frame*** of the person, thing or event being researched. Is it a relatively current or relatively historical topic, however defined?

- The ***place*** or geographic location of the person, thing or event. Is it local, provincial, national or international in scope? (not always a relevant question)

Decisions made here will directly influence the student's information retrieval plan, in particular, their choice of "sources" and the priority order in which these choices are exercised.

Step Two: Subject Headings as Part of an Information Retrieval Plan

Having a prioritized list of sources to consult, while vital to student success, may not be as important as having developed a list of plausible *subject headings*. This seems to be particularly treacherous territory for students who can, with great alacrity, suggest two or three subject headings, none of which may be anything more than ingeniously off topic. The creation of appropriate subject heading lists will need to be a matter of emphasis and much attention throughout the entire life of the student.

Even the best guessed subject headings, however, may eventuate in no information leads. As part of the development of effective student strategies, then, needs to come the understanding that the developing and actioning of an *information retrieval plan* is characterized by events that are extremely fluid and subject to the contingencies and dynamics of the information quest. For example, a student studying the Amazon who has "best guessed" *Amazon* and *Rivers* as the two most likely subject headings may have to significantly alter the research plan if no information "hits" are made. This is a process which, especially for the younger researcher, will require regular adjudication for "probability of success" by the teacher-librarian and teacher.

Essential to our understanding of this aspect of the research process is the notion that the circumstances of the information search are constantly changing as students discard subject headings that are not functional and identify and record those that seem to be working. It is a very situational process, dependent upon appropriate choices at the subject heading level and on the availability of resources. Nevertheless, preparing a list of subject headings promotes the notion that:

(a) *subject headings are essential to the process;*

(b) *the card catalogue and other directories are unlikely to think exactly as you do (or anyone else for that matter);*

(c) *subject headings are more a fluctuating than a fixed commodity; and*

(d) *after all, something is bound to work if you can be inventive enough in thinking up subject headings and as stubborn as is necessary in pursuing information to its final resting place.*

Subject headings, especially if teacher/teacher-librarian approved, will be immediately useful when applied to the card catalogues, encyclopedia indexes, magazine indexes, and other *information directories* that were identified in the first step of the Information Retrieval Plan. The listed subject headings will hopefully reflect the students' increasing ability to suggest alternate subject headings based on broadening or narrowing of the topic as well as the suggestion of creative alternatives.

Step Three: Identifying and Listing Key Words as Part of an Information Retrieval Plan

Another useful part of an Information Retrieval Plan is the identification of *key words* (and synonyms) intended to assist students when using indexes or tables of contents. Once the physical resource has been located, the identification of key words can facilitate the process of locating information within the resource. The generation of key word lists will support students in a variety of information retrieval strategies including those associated with skimming, browsing, listening and viewing.

Components of an Effective Information Retrieval Strategy - A Review

The key components of an effective *Information Retrieval Strategy,* then, would include some or all of the following abilities:

1. ***The ability to formulate an Information Retrieval Plan including the ability to:***

   - ***discern the category or family of the research topic***
   - ***determine whether the time period or geographic location of the topic is relevant to the search strategy***

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- ***propose and enumerate an appropriate search strategy based on the above issues, including listings of possible sources both within and external to the school library***
- ***suggest appropriate subject headings to locate information on the topic***
- ***develop a list of key words for use in assisting with information location within a resource.***

2. ***The ability to action the Information Retrieval Plan by:***

- ***skillfully locating the information directories identified in the plan***
- ***using these directories to identify potentially suitable resources***
- ***locating resources and finding relevant information within each resource.***

When dissected in this manner, an Information Retrieval Strategy is shown to be an extremely complex, even sophisticated, combination of skills and problem-solving abilities, based on a fundamental knowledge of information sources. Pitfalls along the route are legion. And yet, it is not unusual to expect students, even at the fifth and sixth grade levels (and sometimes earlier), to engage in this process without significant guidance or instruction related to certain pivotal decision making areas. When is the last time, for example, that we had students analyze the nature of their topic, or suggest possible subject headings, or list and prioritize the most plausible directory options.

Practice to Proficiency - Some Thoughts on the Nature of Repetition

It would be unreasonable to expect that all students would be in possession of, or even capable of, equally sophisticated information-retrieval strategies. There are, obviously, developmental as well as instructional considerations involved in the acquisition of these strategies. It is suggested, therefore, that total control of this process be relinquished to students only slowly with multiple opportunities provided along the way *to practice to proficiency.*

It would be entirely reasonable, for example, to expose younger students to research only in the *General Works* area (animals, dinosaurs, etc.) until a "pattern" for accessing information in this area is well established. At some later point, another category of research, say *Biographies,* might be introduced and its "pattern" presented in contrast to that of General Works. Still later, other issues would surface such as "currency" and "place" concerns. By the end of the twelfth grade, however, all of the "accessing" patterns or templates should be well established. At that point, we should be able to state with some certainty that the student has a repertoire of effective information retrieval strategies in place.

III. INFORMATION PROCESSING - PHASE THREE OF THE INFORMATION CYCLE

Information Processing Defined

Information processing, at its most fundamental level, is concerned with a student's ability to decode and, ultimately, to comprehend information. It requires that a student be able to interact with, and make meaning of, a large variety of communication forms and experiences (interaction implying a transaction initiated and sustained by an active learner consciously directing his continued involvement in and investigation of a resource). The informed consumer of information should be able to effectively interact with a variety of print-based media; the spectrum of essentially visual resources (photographs, films, and video); a host of symbolic communication forms (maps, charts, graphs, graphics); as well as to obtain data through listening, observation, and active engagement and participation in a variety of events and processes.

Profoundly influenced by such factors as motivation (determined in part by content and context), and orchestrated by attention-directing techniques and structures, information processing seems to encompass much of what schooling as we know it is about. Issues of information processing seem, indeed, to be issues of literacy.

Information processing demands that the student be able to accomplish three major tasks:

1. ***Interact with resources (i.e., read, listen, view, touch, interview . . .) at a level of understanding sufficient to identify and obtain relevant information from the resource.***

2. ***Add relevant information to some form of data gathering device - web, data bank, outline, audio or video recording, sketch pad . . .***

3. ***Record, in bibliographic form, the resources from which information was obtained.***

Ultimately it is hoped that students will do more than understand the resources that they encounter. With appropriate intervention they may begin to evaluate these resources as information sources, to assess them in terms of interest, clarity, and point of view, and in terms of freedom from information contaminants such as bias, stereotyping and sexism.

Information Processing and Information Literacy

The recent attention given to the problem of illiteracy has focused our attention on issues of literacy generally. This, in turn, has inspired some educators to redefine literacy, expanding their definitions to encompass almost all of the events and processes of schooling. Literacy has, therefore, assumed a new meaning, defining the broadly educated person rather than one functionally able to read and write. It is suspected, however, that despite this well-intentioned redefinition, many educators continue to view literacy primarily in the print-literacy context. Thus, while we direct the majority of our efforts towards having students achieve verbal literacy, we seem much less concerned and concerted in our efforts related to the several literacies subsumed by the larger literacy context.

Towards Literacies of a Non-Print Persuasion

We cannot, therefore, assume that equivalent progress is being made in relation to others of these literaries and, hence, toward certain other information processing objectives. Most non-verbal communication forms receive much less attention than that paid the verbal literacies, if indeed they are paid any attention at all. This is indeed a curious circumstance given the expanded view of literacy and especially in an era in which students demonstrate little regard for the primacy of print, often preferring the ministrations of the various technological entities which surround them, if not in the school, almost certainly in the home environment. Given a choice, students often show a marked preference for learning from or though the media, these experiences being in their opinion inherently more interesting, more efficient (less work), and probably more real. Should we expect anything less given the absolute dominion of the media in the lives of many, if not most, of these students?

There is, however, no reason to believe that because students prefer these experiences, that they learn more efficiently from them. As some of the work of teaching is given over to technologies that at once are able to more closely replicate the realms of the real and, at the same time, realize the furthest fantasies of our imaginations, we come to the realization that students interact with media in ways that cannot entirely be measured. Since we cannot practicably assess much of this learning, we must resort to evaluating conventional learnings, leaving us to wonder truly what was experienced and what was gained.

Layers of Literacy

Film, video, and computer transactions are rich in teaching/learning possibilities, each providing experiences on several levels simultaneously. In a linear sense, the film or video event provides a measured quantity of information, very densely and richly packaged. Much of the information considered to be of importance (or "note" worthy) comes from the audio track. And yet, each visual frame contains its own wealth of riches, informational treasures we have not been taught to uncover . . . "What *did* the Egyptians wear? " . . . We might need the narrative to discover the precise words but our eyes should provide much of the knowing.

It is the development of these additional information processing strategies (development of these literacies?) that have been almost singularly ignored. It appears that little has been done to develop strategies for interacting with study prints, films, videos or audio tapes, the presumption being perhaps, that learnings from these sources are more easily gained. Nor has there been a concerted effort made to improve the student's ability to participate in the many experiences and processes deemed more real, the so-called primary sources and events of research - interactions with models and realia, interviews, field trips and observations; simulations of the real and the real itself. There would appear to be a need to consider the great diversity of informational sources (of both a primary and secondary nature) and to devise processing strategies unique to each.

This diverse range of resource and experience is, after all, increasingly representative of the informational encounters made on the fields of research. Each represents a natural opportunity for the involvement of the teacher-librarian in the development of student strategies, ultimately enabling students to independently sup from a variety of information sources. Collectively they portray the Information Processing area as one rich in challenge and opportunity.

Creating a Framework for Effective Information Processing

In any research event, students can be either random, undirected consumers of information, or, alternatively, directed and motivated by personal interest; inspired by a stimulating classroom environment; or provoked by a questions/concerns-based strategy. Although these frameworks range from the real to the more artificial and contrived, they are contexts which provide the essential engine to advance and sustain interest in a research project.

The undirected researcher is generally engaged in information browsing, typically providing his or her own context, and assessing relevancy of information from the perspective of that context. It is research that knows no bounds other than those assigned by the researcher. In that way it can occur across a continuum of productivity from "very" to "not so very." It is obviously not a recommended strategy for students who have little sense of a reporting structure or of how to develop an argument or thesis.

At the other extreme is the directed researcher, urged on by forces that may be either primarily internal and personal, or primarily external, and *personal* only in the sense that it is a sense of impending reward (or punishment) and not an inherent interest in the subject that animates the researcher's efforts.

Three Issues Influencing Information Processing

Following is a brief discussion of some of the issues which we believe most directly influence information processing. The first of these, intrinsic motivation, we will argue *automatically* triggers a set of processing strategies based on an in-built list of questions to ask, concerns to address, or thesis to advance or defend. A second issue which bears on our discussion is that of the motivation provided by the materials themselves. Materials properly designed, may indeed be their own source of stimulation, encouraging sustained interest and involvement in a subject. The third issue, and the one dealt with most extensively in this discussion, is the problem of directing the information processing behaviours of students in circumstances that are classroom circumscribed. These circumstances are not always latent with intrinsic possibility and are, therefore, much more dependent upon the contrivances of an externally imposed structure. This issue will be explored in depth in the section entitled *Extrinsic Motivation and Information Processing.*

Intrinsic Motivation and Information Processing

How the student approaches the task of processing information is somewhat dependent upon the nature of the research assignment and whether the process has been set in motion by intrinsic or extrinsic factors. If the student is motivated by a personal interest in the topic or subject, it is likely that a number of specific questions or concerns related to that subject will already be in place. "Will this breed of dog make a good pet?" "Will that bicycle have the necessary accoutrements (status) to make it acceptable to the peer group?" The student in this scenario is not a random consumer of information but, rather, one who is interacting with resources on the basis of interest and need.

It seems that the intrinsically motivated student is able to independently and voluntarily apply many of the information processing strategies that have been acquired through the schooling process or which are already in place intuitively. These students seem instinctively able to skim to find relevant information, to read, view and listen critically, and to analyze and synthesize the information obtained. Instructional intervention at this stage is superfluous (if we accept the student's ability to decode as a given), the interest factor being such as to focus attention on the salient and necessary informational bits.

Materials as a Source of Motivation - A Second Factor Influencing Information Processing

Another factor affecting student involvement in research is the nature of the materials encountered in the research process. Obviously, in most research situations, a range of resources will be broached, some inherently interesting and others less so. In the absence of the motivational effect provided by a personal interest in the topic, the materials themselves may provide a certain stimulus, serving to extend the relationship between student and subject beyond what might normally have been expected. Thus a topic approached with some trepidation may prove to be of considerable interest should the materials be to a certain extent self-propelling.

Although the student's attention may be momentarily captured by a resource, in the absence of a personal interest in the subject, resource motivated involvement may lead to uncertain and unpredictable student learning, not always a desirable outcome. It seems clear then, that rather than depending upon the vagaries of personal interest and a generally uneven level of resources to initiate and sustain interest in a subject, that an external structure of some sort could prove a powerful force in directing the information processing behaviours of students. Indeed it would seem that such a structure might be integral to the effective processing of information.

Extrinsic Motivation and Information Processing - The Generation of Attention Directing Structures

The independent researcher investigating an area of special interest such as resolving a personal problem, or reaching a buying decision, may be operating on a very different level of involvement than the student engaged in a school-imposed research assignment. The independently motivated student is simply seeking enough information to reach an operational decision, few of which decisions are encumbered by the ten-page, double-spaced report. Research of this personal nature is needs driven and action oriented.

The school-based assignment, on the other hand, depends on a very different type of motivation and derives from a radically different context. Unfortunately, despite our best attempts to assign relevancy to such topics, the constraints of curriculum seem to be such that not all research assignments will align with student interests as much as they will with the needs of society to perpetuate and indoctrinate. Further, the usual product requirement - the ten-page, double-spaced report - has less to do with the student's need to write than with our need to determine whether they can. In this event, the product becomes, somewhat unwittingly, part of the complete motivational package.

Library research assignments often originate within these artificially contrived contexts, requiring a certain degree of teacher artifice to induce and sustain the proper levels of involvement. Lacking self-generated lists of questions or concerns, one of the most obvious means to ensure student involvement is through the generation of a questioning structure. Questions related to the topic, class brainstormed and categorized, often become the primary means of arranging student buy-in while, at the same time, providing some level of understanding of the research assignment.

Question-directed research seems to be common practice at all levels of schooling including the junior and senior high levels where question lists serve as the most popular means of directing student research. Unfortunately, students at these levels seem frequently not to be involved in the development of these questions, becoming instead, passive recipients of teacher generated lists of "likely looking questions." Thus a very vital step in the research process is frequently omitted, one which affects motivation, understanding, and ultimately, meaningful participation in the research process.

Regardless of how the questions are generated, however, they will exert an extremely powerful influence on the research process, directing the information processing efforts of students throughout the entire time of research. They will indicate what is important and what is extraneous, will prove invaluable in determining key words, and will otherwise direct the skimming, scanning and deep processing behaviors of students. Ultimately they will exert an evaluative influence as well for they will provide a standard against which to measure student success in completing the information quest.

A Caveat

While some form of attention directing structure (and there are several - focus, thesis, problem, categories, questions . . .) is essential to the research process, a question-based research design, whether student or teacher generated, tends to be the most common methodology at all levels of schooling. Particularly for the elementary student, however, a categorized list of questions, neatly organized on the separate pages of a data bank or within the cells of a web, represents a most welcome and unambiguous form of research guidance. But, such a structure may inadvertently represent a form of confinement as well, for students at the elementary level are prone to interpret such questions both quite narrowly and quite literally. For example, a pair of Grade 3 students in seeking an answer to the question, "What do baby rabbits eat?" encountered the following text:

> "Newly born rabbits (kittens) are blind and deaf. They have almost no fur and cannot move their legs. They grow very quickly on their mother's milk. This is a very rich food and gives the baby rabbits all they need. The mother comes to feed her babies only once each day, for about five minutes. Between times the doe closes the burrow entrance with soil."

Perhaps not unexpectedly, the students made a mental beeline to the word "milk" which then became their one word response. Focused on finding the "correct" answer, they failed (initially at least) to report any of the supporting information that so obviously enriched this passage and would obviously have enriched their answers as well. Having read the entire passage, they had correctly deduced which information was appropriate and which was extraneous to the question being asked. However, when queried, they were able to provide these additional details and, so, while not added to a physical data base of any sort, they had added the information to their internal cognitive structures for some indeterminate period of storage and possible future usage.

Generalizing our Condition

And so the dilemma. . .to develop all of the potential points of interest related to any topic would require extensive, if not exhaustive, lists of questions. The creation of such lists usually requires a curiosity and patience far beyond the range of most students (who, it seems, are more ready to be amazed at the information they find than to speculate, through questions, on potential areas of amazement).

One answer may be in the generalizations that could arise from the clustering of questions. Brainstorming usually results in a string of questions which are first clustered, then named (categorized). Due to the nature of the brainstorming process, the question strings generated under each heading tend to be unequal in length and depth. Rather than depending exclusively on these strings, it may be profitable to introduce students to the gentle art of generalization as a means of extending the scope of any given category. What it may mean in practise, is the clustering of questions even within a category in order to generate one or more statements that tend to be more inclusive than they are specific. For example, given the category "babies" (still with rabbits as our "topic") we might, rather than generating endless lists of who, what, where . . . questions, summarize our major concerns about rabbit babies and therefore direct our research, with statements like, "Describe the feeding habits of the baby rabbit" or, even more generally, "Tell us about the life of a baby rabbit."

While we can see the value in "cueing" devices such as question strings and generalizations, we at once see the pitfalls inherent in each - one erring on the side of narrowness, the other resonating on the other extreme. Questions are, as noted, restrictive, narrowing the search for information to a question and answer, stimulus-response scenario. Generalizations are, if anything, too inclusive, and while still essentially in the reporting vein, invite non-discriminating inclusions of information.

Excluded from both of these processing strategies, however, is any particular need to involve many of the higher levels of cognitive operation. Ideally, we should observe a progression in both the level of involvement, and depth of thinking, required of students in developing and responding to a research structure. Junior and senior high students need to be challenged in the generation of more complex guidance structures - *problems, issues, areas of investigation, theses.* These are structures that extend the student far beyond the gathering of answers and the rote reporting of data to the higher stratas of thinking and problem solving.

The Application of Learned Information Processing Strategies

At times, the student's ability to interact with information will be intuitively informed. On other occasions, however, the effective processing of information will be dependent upon the activation of "learned" strategies selected for appropriateness and consciously, perhaps even somewhat mechanistically, applied. These information processing strategies tap a broad range of student abilities including many higher level thinking skills as well as, potentially, certain metacognitive behaviours. Some or all of the following processing strategies may need to be invoked during the research event and will, therefore, need to be the object of instruction either prior to or during the time of research:

- ***Reading strategies such as Q.S.R. (Question, Skim, Read) or those related specifically to scanning, skimming, the use of key words, and so on***
- ***Viewing strategies such as that developed by Eshpeter, Gray, de Leeuw, and Carswell***
- ***Listening strategies***
- ***Strategies for obtaining information from human resources (interviewing techniques)***
- ***Strategies for interacting with, and obtaining information from, displays, models, realia and other physical resources***
- ***Observational strategies - learning to meaningfully observe real world events and processes***

Information Relevancy - Looking for a Match

Identifying information that is relevant to the information need -- the need-solution match -- is the signal event of the information processing act. It is manifested by the sudden flick of a highlighter pen, the jotting of notes, a quick sketch; indicators that something has been observed, a question has been answered, or an insight has been gained. And yet, these confirmed informational sightings may lead to but other quandries for the student.

There is yet a need, in many instances, to extricate this information from its source and to ensconce it on pages and in words that belong uniquely to the researcher. Students are admonished that plagiarism lurks, that copyright laws can be broken with but a stroke of the pen, and that the author's originality must lie uninfringed. Information processing is about to become a series of one-liners.

"Don't copy, especially whole sentences."
"Use your own words."
"Jot down only key words."
"Record information in short points only."
"Watch carefully and take notes."

Thus apprised, the student enters the arduous realms of information extrication -- committing, if not plagiarism, at least some relevant data to paper. Regardless of how this condensed information reaches its ultimate destination, however, it has traversed a difficult distance. Not only has the relevancy match been made, but the student has dealt with the need to say something in his own words that has already been quite well said by the author. Further, these new words must take up residence in a particular part of a data bank or web, based on the assessments and discriminations made by the researcher. These are the things of higher level thinking - comparison, analysis, evaluation - and they pervade the entire process of research.

Bibliographic Structures

The moment an information (or several of them) has been deflected onto a student's data sheet, it seems a propitious time to recognize its source. Thus, although it is not as much a matter of information processing as it is one of information recognition, it is included in this phase for convenience sake. Requiring students who are note-taking to immediately recognize the source of their inspiration is, we believe, a most worthwhile attainment.

Not that all student bibliographies must conform to "Robert's Rules" however. For beginners, it makes ultimate sense to ease into bibliographies, the concept of acknowledgement more important than the trifling with commas, semicolons, underlinings, and the like that full bibliographic citations imply. Better, we think, to increase the level of complexity and sophistication of the entry over time so as not to deter erstwhile researchers from investigating and reporting all sources.

The Evaluation of Information - Issues at the Edge of Information Processing

While it is common in library, language arts and social studies circles (among others) to suggest that students be able to detect such information contaminants as inaccuracy, bias, sexual/racial stereotyping and racism, seldom are these considerations actively dealt with either in the day-to-day events of the classroom nor in the independent pursuit of information framed by the research process. Perhaps because our concerns generally attach to issues deemed more fundamental, such as having students actually locate relevant information within a resource and to comprehend that information, these issues are seldom addressed. Perhaps, too, educators tend to exhibit a basic faith in the reliability of the information accessible to our students, the presumption being, that it has been safely filtered by editorial boards, legal departments and other agencies concerned with our informational welfare. Educational materials are generally considered to be written in a fair and objective manner without, necessarily, an identifiable point of view and, therefore, fundamentally safe. Indeed, unless particular and even somewhat blatant examples are provided to students (various forms of propaganda, countervailing viewpoints staked in editorial positions and so on), what few occurrences there might be within these generally neutralized materials will likely go undetected.

A Matter of Subjectivity

What may be at issue here is the concept of subjectivity and the notion that a subjective viewpoint and writing style necessarily invade even the most neutral or innocuous of materials. Writers generally choose their subject matter, develop the factual fabric with which to support the subject, select areas of emphasis, deselect areas that may prejudice their case, and otherwise reflect a particular predisposition towards the subject and an orientation to the reporting of it. Author viewpoint, therefore, becomes a potential area of investigation for our students.

We may, as well, wish to have students delve into matters of writing style, for the author will leave a style imprint as surely as he might a fingerprint (although some writers seem to write with gloves on, leaving hardly a trace). The style might be sparse or generous, clever or cumbersome, witty or droll, but it will be present nonetheless. In our urgency for "information," however, it seems we seldom take the time to consider these issues for it is the content, not its construction, that is usually the object of our affections.

IV. INFORMATION ORGANIZING AND CREATING - PHASE FOUR OF THE INFORMATION CYCLE

The point at which the data has been collected and the manipulation of it begins is the rather arbitrary dividing line between *Information Processing* and *Information Organizing and Creating*. It is at this point in the process that certain decisions as to the end-product are reviewed and, in light of the data collected, altered as new and more appropriate approaches are suggested. Additionally, this is the opportune moment to review with students the basic nature of the report and to discuss certain creative issues such as those related to matters of style, substance, and viewpoint.

Selecting A Reporting Format

In the best of all circumstances, students will be given an opportunity to develop expertise within a range of reporting mediums and formats and to experience a variety of styles within those formats. Although there are, in truth, hundreds of options, they generally fall into four major categories of development.

1. **The written report format.** The essential informational content (the reporting back of the student's learning) is through the written word, even though the report may be supplemented with such artifacts as visuals, charts, and displays.

2. **Mediated format.** Based typically on a modified form of the written report - the script - mediated reports may take the form of slide, video, or transparency-based presentations. In the best of these reports, the task of presenting information is shared somewhat equally between the narrative and visual elements, the one reinforcing the other, while adding its unique informational contribution. At the other end of the scale is the mediated presentation accompanied by music, a style of presentation aimed much more viscerally at the viewer.

3. **Product-based format.** In this type of outcome, the learnings of the researcher are conferred upon the audience through the use of such conveyances as models, dioramas, posters, and displays. There is not always, in such instances, an automatic engagement on the part of the audience, which must occasionally struggle to find meaning in this work. The authors of the products must be instructed in such matters as cueing devices (alerting the viewer to what is significant in a display) and to design considerations. This is, however, a bi-partisan arrangement, and the viewer should, in turn, be in possession of learned strategies for interacting with whatever confronts them even if it is only the strategy of moving quickly to the next display.

4. **Presentation-based format.** Some learnings are best portrayed through options which invoke another range of communication skills that some might consider to

be towards the more creative end of the spectrum. Plays, stories, readers theatre, skits, songs, and poetry, all based on thorough research, are included in this grouping.

A Continuum of Possibilities

In truth, regardless of the reporting format chosen, each exists upon a continuum of possibility. The written report, for example, can take many different forms (the research project, case study project, survey project, and so on) but all are variations on the scholarly processes of postulation, investigation, and reporting. Indeed, the matter of developing the student's ability to research, and subsequently report, should be viewed as a multifaceted challenge that should, over time, require of the student much more than just an increase in the length of the final product. Given that there are developmental and maturational factors at play, it would be hoped that the level of challenge would be adjusted accordingly; that the student might begin with some rather basic "reporting" pieces but move towards more interpretive editorial efforts as schooling proceeds.

The following rough categorizations hint at the possibilities for extending student work beyond the straight recording and reiteration of data regardless of the reporting format chosen.

Basic Report

The student conveys only an understanding and interpretation of the written, spoken, recorded, filmed and photographed works of others. The student's opinion is seldom sought or ventured, although a summary statement of student opinion on any given topic should be regularly required and would constitute a welcome addition to their reports (suitable at Divisions I and II).

Issue-Based Reporting

The student supports an issue (argues for *or* against, or perhaps *both* for *and* against an issue) based on the understanding and interpretation of the written, spoken, recorded, filmed and photographed work of others (suitable at Divisions III and IV).

Thesis-Based Reporting

The student develops a position (thesis or hypothesis) based on individual thoughts as well as the interpretation of the written, spoken, recorded, filmed and photographed works of others (suitable at Divisions III and IV).

Note that as the student progresses through the grades, ever greater levels of personal interpretation and involvement are invoked, while the need to base the resulting product in solid research is retained and reinforced.

Organizing Data

Once the decision as to the end-product has been finalized, the act of creation can proceed. For most student creators, whether they be makers of reports or of displays, there is a need to consider the relatedness of information - deciding what goes with what for the purpose of linkage into like informational units. This is an essential creative act whether the information units be the sentences and paragraphs of the written report or the log cabins and clearings of a pioneer creche. However, for the purposes of this discussion, we will confine our comments to the written report, leaving the reader to extrapolate to other formats.

The process of organizing data would have been given considerable impetus earlier in the research process through the question/thesis generation process and through the subsequent selection of a data bank, web, outline, or system of note cards as an organizational device. With their raw data now arrayed before them, the writers begin the task of information manipulation - determining what information should come first; deciding on the relatedness of information; and beginning the exhaustive search for just the right words and phrases in order to make a dent in the required ten-page quota. While the very act of maturing and developing will be of considerable assistance to many students, enabling them to construct increasingly more interesting and complex documents, the young researcher is often very much in need of tip-offs as to how to get this thing going.

Consider for a moment the student involved in a research project on the subject of *insects*. The group-brainstormed questions have been grouped into five categories of data collection - Physical Characteristics, Habitation, Life Cycle, Enemies and Food. For the assiduous researcher, great will be the data collected in each category, all of which will need subsequent reclassification at a finer level of detail.

The *Physical Characteristics* data page, for example, may contain several different points related to the insect's wings (size, translucency, color, number of wing beats, location, and so on), each point possibly recorded separately from the others (as the information may have come from different sources). The student will first need to identify, then group, wing-related information using some form of classification scheme (color coding or cut and paste techniques can be particularly useful in sorting information). Using these classification schemes, all of the informational bits will eventually be sorted out, assigned to adjoin like information, and generally readied to assemble into paragraphs of varying degrees of interest and persuasion.

The Creative Process

The *Organizing and Creating* phase of the Information Cycle forces us to consider not just the organizing of data, but the issue of creative writing within the reporting context. Prior to the writing of the paragraph(s) on physical characteristics and, even though like data have now been identified and grouped, there may be a need for some discussion of the creative writing process. Students left to their own devices are often content with a simple enumeration and linking of facts, e.g., "The cicada's wings are about 3 cm long, reddish brown in color, etc. . . ." basically boring stuff. Introducing elements of creative writing into this essentially expository mode can result in creative sentences like "The Cicada has four big, shiny, veiny, reddish, see-through wings, like a spider's web that has been covered with plastic." Thus we begin to bring elements of both organization and creativity to the reporting process.

If creativity is taken to mean any deviation from the most objective of reporting positions, consideration needs to be given to author viewpoint as well. In order that students become structurally, as well as informationally cognizant, it is necessary that we fear less, and encourage more, the examination and injection of viewpoint even at the earliest levels of reporting. The Grade 3 animal report can conclude with the child's sentiments towards the animal "I think skunks would make good house pets because . . ." The Grade 6 report can reflect the child's feelings about a topic deeply investigated over a period of weeks "Living in Ancient Greece as a peasant would have been difficult because . . ." Certainly by the time students are researching and writing at the high school level (regardless of which medium they are writing for) they should be aware of the various styles of presenting information, from an arbitrarily defined position of objectivity to one of perceived subjectivity, and be in some ways capable of both discerning its presence within the works of others and in knowingly emulating it within their own work.

Components of an Effective Information Organizing and Creating Strategy - A Review

The philosophy implicit in the Generic Library Program Model is that students should have a repertoire of strategies for organizing and creating information and should be able to select a strategy appropriate to the information sharing task. In developing an end-product, the student should be aware of the potential of incorporating pre-made materials as well as the value of producing original materials.

An *Organizing and Creating Strategy,* then, might reasonably consist of the following skills, abilities, and competencies:

1. ***Knowledge of available information sharing possibilities. This can be regarded as an expandable repertoire both horizontally and vertically. That is, each year a student's repertoire should grow both in the number of presentational forms in which he is competent and in degree of competence within the form.***

2. ***Ability to select the most suitable medium (including written reports) for the "sharing" task.***

3. ***Ability to independently develop an end-product drawing upon some or all of the following abilities:***

    - ***writing skills (including paragraphing and editing abilities)***
    - ***scripting skills (including the correct use of terminology)***
    - ***interviewing skills (including conducting an interview for video)***
    - ***drawing, illustrating, or computer graphic skills***
    - ***skills related to media production such as video and photographic skills***
    - ***desktop publishing and desktop video capabilities***
    - ***"making" and constructing skills***

It is assumed that, regardless of the presentational form chosen, students will ultimately demonstrate the ability to creatively express and organize their ideas and present them in a competent manner.

V. INFORMATION SHARING STRATEGIES - PHASE FIVE OF THE INFORMATION CYCLE

Three Major Areas of Concern

Regardless of the communication medium chosen, particular sharing skills will need to be developed in order that information be shared in the most interesting and informative manner possible. Information sharing, then, is concerned with the development of effective presentational techniques.

Oral reading and public speaking, for instance, require that concerns such as articulation and expression be addressed. Audio-visual presentations require consideration of other presentational factors such as pacing, relationship of audio and visual communication channels, information density, and so on. Few of these skills, unfortunately, are student innate.

Information sharing, then, encompasses three major areas of skill and strategy development and includes:

(a) ***the conventions associated with preparing a product for presentation;***

(b) ***the protocols of sharing information effectively; and***

(c) ***the etiquette of being a good audience.***

TOWARDS INFORMATION LITERACY

Information Literacy: The ability of an individual to select and apply a variety of appropriate strategies in a planned and systematic fashion eventuating in:

- ***the accessing of information from a multitude of sources;***
- ***the processing and evaluation of that information through a variety of sensory modalities;***
- ***the synthesizing of the acquired information into new and meaningful patterns; and***
- ***the sharing of this new information through the selection, development, production, and presentation of an appropriate communication event or form.***

Movement towards information literacy occurs through activities which, in the best of circumstances, will require of students a total and repeated involvement in the research process. It is within the context of research that we see the student most completely exposed to all aspects of information use - finding, utilizing, creating, and ultimately sharing information. But to limit the teacher-librarian's involvement to only these most ideal of circumstances or to presume that it is only library-based activities that elicit growth towards information literacy is to ignore several realities.

We know, of course, that the teacher-librarian cannot realistically be included in all of the informational interchanges and transactions that characterize effective classroom practise. We know, as well, that teacher-librarians occasionally do not have the opportunity to participate in research-based units in the way they would desire or that would develop the potential of the student to the fullest. At yet other times, the classroom-based research assignment may not be designed to pursue the research process in its entirety. For example, students on a fact-finding mission who do not face a written report as an end-product and, thus, the need to engage in further manipulation of data, require very specific interventions related only to locating information and not to other aspects of the information cycle. Similarly, situations driven by a creative writing activity rather than a research assignment, but directed towards a mediated end-product, again suggest very specific instructional interventions confined to one particular aspect of the cycle.

In all of this, we sense both the difficulty and inappropriateness of assigning the responsibility for the development of information literacy to one program and to one person. It is obviously a collaborative effort between classroom and library, teacher and teacher-librarian. It is, however, not unreasonable to expect leadership from the school's on-site information specialist, the teacher-librarian. Under this leadership, some reasonable targets for information proficiency can be established. These targets, identified as Student Information Profiles, are fully discussed in the next chapter.

The condition of information literacy is, we suggest, the product of regular trips through the information cycle in whole or in part. Given regular and systematic opportunities to participate in the events of research should result in significant progress by students towards this goal.

The Instructional Program - A Review

In this chapter, the concept of the Information Cycle was introduced and particular aspects developed in detail. Central to the discussion was the proposal that the Information Cycle should comprise the main instructional involvement of the teacher-librarian and constitute the foundational element of the school library program. This emphasis on information, however, forces us to examine the profession's relationship to, and involvement in, literature and other forms of cultural expression (music, art, television, motion pictures).

Indeed, there is a need to consider, on an ongoing basis, the profession's relationship to those components of the program regularly embraced, whether these be historical attachments (literature) or more contemporary (information). Further, there is a need to consider the teacher-librarian's relationship to information as not simply that afforded by the cooperatively authored and implemented research unit. It is suggested that this relationship be viewed as both premeditated - the cooperatively planned units and parts of units - and, also, opportunistic. Many interventions are spawned by the unplanned transactions between students and information necessitated by spontaneous classroom events and by student-initiated, need-to-find, need-to-know investigations. It is the sum total of these passages through either the totality, or parts, of the information cycle that contribute in significant measure towards information literate behaviour.

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3

Student Information Profiles

TOWARDS A DEFINITION OF THE SCHOOL LIBRARY PROGRAM

School library programs have, in the past, frequently been guided by district-produced scope and sequence charts; typically, taxonomies of skills designed to give direction to the instructional efforts of teacher-librarians. Not only have these scope and sequence charts provided a sense of direction, but they have served to grant school library programs a sense of legitimacy and stature, substituting, in many resepcts, for the recognition not achieved at the provincial level.

Analysis of many of these scope and sequence charts, however, reveals a program too often based on the development of low level skills in an isolationist context. Philosophically, these programs seem to emanate from the reductionist viewpoint of "if only." If only, it is thought, it were possible to come to grips with all of the fundamental particles of the discipline - not just its molecules but its atoms and subatomic particles, its quirks and its quarks - all would be well. This view holds that the key to such activities as locating information is in knowing the particles and the particulars; the Dewey decimal system, alphabetizing and decimalizing, all to the *nth* parts. In this knowing, an abundance of resources is almost certain to jump into the student's shopping cart.

An Alternative - Student Information Profiles

The authors' views hold (as has partly been expressed in the discussion on the skills versus strategies issue early in chapter 2) that while the fundamental particle approach to library instruction is of some relevance, it is of less concern, ultimately, than the building of effective *strategies;* providing students with sets of skills, certainly, but developing, as well, sets of major competencies or strategies that go far beyond the skill wielding behaviours traditionally inculcated. In truth, for all of our concern about teaching students that a resource bearing the number 907.2457 comes before one with the number 907.2463 on the shelves, there is every likelihood that, in fact, it doesn't, the last class through the library having done its best to rearrange the filing system. It is perhaps of greater importance to teach students that "directed browsing" may be one of their most potent locational tools and that books are, after all, but one resource of many likely to be available on any given topic.

That having been said (and somewhat facetiously) it behooves us to suggest an alternative method of describing the school library's instructional program. For a number of years, the authors have been advocating a method of program description called *Student Information Profiles,* statements of student year-end behaviour expressed in strategic, not skill, terms. Profile statements describe the student who has, over the course of a year, been exposed to a multiplicity of research and information-based events and who has, as a consequence, achieved a certain degree of mastery over some of the processes of research. In many respects, these statements represent indicators of progress towards the ultimate goal of information literacy.

Strategy statements tend to sound like behavioural objectives. For example, the statement "The student will be able to devise an information retrieval plan for locating information on the Russian Revolution listing at least four potential sources of information" may describe an appropriate year-end behaviour for a tenth grade student. Similarly, the statement, "The student will be able to effectively locate information using the sources identified in their plan" suggests another aspect of student expertise. Both statements (emanating from the *information retrieval phase* of the cycle) imply, but do not state, that a particular knowledge base is in place and that a certain skill level has been obtained. They infer that the student has an awareness of such information directories as the card catalogue or computer database, encyclopedias and magazine indexes, the vertical file, and, perhaps, various film and video catalogues. To be used effectively, each of these directories requires of the student particular skills, including the ability to suggest key words, to alphabetize, to decipher the several codes used in the various indexes and catalogues, and so on.

The following chart illustrates the relationship between year-end strategies, and the skill and knowledge components that serve as the fundamental building blocks of the various strategic behaviours. In the chart, strategies are represented as the consequent behaviours of combining selected "skills" and "knowings" into purposeful action.

Exerpt from a Hypothetical Year 4 Student Information Profile

Strategy Statements	Knowledge Base	Skill Base
Students working in pairs generate an information retrieval plan listing three possible sources (or directories) that could lead to information about a specific topic in the General Works category.	Knowledge of at least three sources or directories that could lead to the required information. Students should have an awareness of the purpose of the card catalogue, encyclopedia and magazine indexes, vertical file, and telephone book.	
As part of their plan, students will develop a list of subject headings (three minimum) which could be useful in locating information on their topic.	Techniques for broadening an information search through the suggestion of appropriate alternatives.	
Students, in teams, and using their information retrieval plans will locate the two "best" resources they can find on their subject.	Knowledge as to the physical whereabouts of the library's various information directories. Knowledge as to the possible location of identified resources. A sense of criteria by which to evaluate resources for "bestness."	Alphabetizing. Decimalizing. Ability to use indexes, table of contents.

As this brief excursion into a hypothetical Year 4 Student Information Profile indicates, the ability to perform capably at any information-related task is extremely dependent upon the student's skill and knowledge base. And yet, in the end, to stop only at the skill and knowledge level is insufficient. It is in the combining of skills and knowledge into "solving" the various stages of the research task that we ultimately see the fruition of library instruction.

And so, even though the skill and knowledge base remains an essential component of the program, it is not the emphasis. Skills are, in fact, subservient to the larger issue, the major competencies or strategies that we wish students to acquire through involvement in research projects. Thus, as we generate these lists of outcome behaviours, we are assembling for each year and for each grade, profiles of anticipated student growth. We hope and expect that students will be able to independently do certain things by the end of the year, and, in so stating, they become our targets for that year.

We have dubbed this complete listing of anticipated outcomes a *Student Information Profile.* Profiles may be stated simply in terms of student strategies or, as in the chart above, broken into knowledge and skill components. Some schools may desire to devise Student Information Profiles for each grade. Others may determine that such regular mileposts are not necessary and may wish, instead, to describe students only at particular milestone points such as the end of the third, sixth, ninth, or twelfth grades.

Student Information Profiles should, in short, answer some rather significant questions related to student growth in the information areas. For example:

- How independent should the student be at finding information at the end of any given period of schooling, be it the end of a school year or some other milestone such as a "divisional" check point?

- What level of expectation do we have in terms of processing information? What strategies do we hope to develop in students, and at what age, in order that students are able to independently extract information from a multiplicity of sources and formats?

- What reporting formats and styles do we hope students to achieve competency in and with? Will they forever be confined to written reports or would we hope that opportunities for systematic growth in a variety of reporting mediums will be provided? If so, what would these be?

Answers to these global questions will ultimately shape the nature of the Student Information Profile developed for each school. They will also serve to shape the nature and extent of the contact between the teacher-librarian and classroom teacher. The shaping of Student Information Profiles is a task that cannot succeed without input from classroom teachers. It is, after all, through "their" students and through "their" respective classroom programs that these strivings towards information literacy must proceed. Strategy development must, therefore, occur within the context provided by the various curricula in order that the information problems presented be perceived as real and their resolution seen as important.

Examples of Student Information Profiles

On the following pages are two versions of a Sixth Grade Student Information Profile - one abbreviated and the other expanded - drawn from the files of Melville S. Dewey Elementary School. Both the abbreviated and expanded versions represent considered, if somewhat optimistic, portraits of Joe and Jill Everystudent who have been schooled in the idyllic environment and traditions of Melville S. for a six-year period. The profiles have been developed across the five dimensions of the information cycle, but they do not, at this time, include those competencies and appreciations related to the literary and cultural appreciation component, an important dimension of many school library programs.

Melville S. Dewey Elementary School
Grade 6 Information Profile - The Short Form

By the completion of Grade 6, the student should be able to independently apply the following information and research-related strategies to an information problem:

Pre-Research

- Select a topic.
- Clarify the topic.
- Brainstorm questions related to the topic.
- Expand upon and cluster questions in cooperation with a partner.
- Develop an effective and realistic research plan in any of the following categories: General Works, Biographies, Current Events, or Consumer Related.

Information Retrieval

- Successfully locate information using one or more of the following research tools: The Card (or Computer) Catalogue, Encyclopedias, Periodical Guides, the Vertical or Pamphlet File, the District Film and Video Catalogue, and the Telephone Book.

- Quickly find pertinent information within resources using assists such as the index or table of contents and skills such as skimming and scanning.

Information Processing

- Apply processing strategies appropriate to the located resources including:

  A reading strategy (e.g., underlining, note-taking)
  A listening strategy (e.g., main idea)
  A picture study or viewing strategy (e.g., Eshpeter/Gray strategy)
  An investigative or interactive strategy

- Select and apply a strategy (or technique) for consolidating information from several sources (i.e., data banks, concept maps, webs).

- Develop a bibliographic structure.

Information Organizing and Creating

- Demonstrate proficiency in organizing and creating information for the following formats: written report, oral report, slide-tape and/or video report. In particular a student will be able to:

  - Write a five-page report supplemented appropriately with diagrams, drawings, or photographs.
  - Prepare summary notes for an oral report based on a more complete written report.
  - Write a three- to four-page, properly formatted script for a slide-tape or video presentation.
  - Develop (or select) appropriate visuals to support slide and video presentations.

  (All products whether written or mediated will show evidence of understanding of the topic and the conventions of appropriate and creative reporting - the criteria are outlined elsewhere.)

Information Sharing

Demonstrate appropriate "packaging" and "presentational" strategies related to written, oral, and mediated presentations (the criteria are outlined elsewhere).

NOTE: This is but one example of a student information profile. It is consistent only with the expectations of one school - its resources, its staff, and its students. While useful as a model, your student profile could assume quite a different shape, as might your students.

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Melville S. Dewey Elementary School
Grade 6 Information Profile - Long-Playing Version

Pre-Research

- Teachers determine the general research area but students will choose a topic from within that range. Teachers will also assist with topic clarification.

- Students individually brainstorm questions related to their chosen topic. Then, with a partner, they further develop one another's topics through additional questions and clustering of those questions.

Information Retrieval

- Students independently make decisions about the nature of the research topic. Based on the nature of the topic (whether current or historical, local or more worldly) and the category of research - Current Events, General Works, Consumer Related or Biographical - the student can independently suggest and/or formulate a research plan.

- Included in the research plan will be:

    - a list of appropriate subject headings (teacher approved)
    - a prioritized list of information sources (directories) likely to yield resources on the topic.

- Students competently use those information sources or directories in their research plan in order to locate resources on their topic.* Major sources or directories in which they should have achieved proficiency by the end of Grade 6 include: *The card (or computer) catalogue, encyclopedia indexes (including CD ROM where appropriate)*, the school's *periodical guide(s)*, the *system film and video catalogue*, the *vertical file*, and the *telephone book* (to locate individuals or, possibly, identify visitation sites).

- Students are proficient in the use of locational assists such as *tables of contents* and *indexes*, and can apply such skills as skimming and scanning to quickly locate relevant information contained within print and non-print resources.

Information Processing

- The student independently *processes* (decodes and comprehends) information located during the search process through the application of appropriate strategies. By the end of the sixth grade, students should be able to knowingly apply at least one strategy in each of the following areas:

    - **Reading Strategies** (e.g., underlining, note-taking)
    - **Listening Strategies** - listening for relevant information.
    - **Viewing Strategies** (such as the Eshpeter/Gray strategy)
    - **Investigative** or **Interactive Strategies** such as those required to fully partake of a site visit, field trip or interview, or, to interact with a static model or item of realia.
    - **Data Banking** or **Webbing Strategies** through which information is gathered in a note-taking or other form of organizational structure.
    - **Bibliographic Information Gathering Strategies** - strategies for keeping track of resources used to acquire information and for reporting these resources in an appropriate bibliographic structure.

Information Organizing and Creating

- By the end of the sixth grade, students will have achieved proficiency in organizing and creating reports in the following formats - the written report, oral report, slide-tape and/or video presentations.

- The written report form will be a maximum of four pages in length and will show evidence of the student's ability to:

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*The teacher and teacher-librarian might reasonably suggest minimums in terms of number and types of resources, e.g., four resources, two of which should be non-book.

  - develop an interesting opening paragraph
  - write interesting sentences in their own words
  - develop paragraphs which indicate a grouping of similar ideas and evidence that the questions generated at the *Pre-Research* phase have been addressed.
  - demonstrate evidence of an overall report structure including an obvious linking or bridging between paragraphs.
  - use headings consistent with the Data Bank or Webbing structure as devised in the *Pre-Research* phase.
  - incorporate a concluding paragraph stating their personal opinion of the subject or topic.
  - supplement with appropriate diagrams, charts, photographs or other visuals.
  - devise summary notes on which to base an oral presentation.

- The slide-tape or video report should be based on a properly formatted three- to four-page page script. The written portion of the script (the narrative, text or "audio" portion) must yield to the same criteria for clarity and effectiveness as the written report. The visual component, furthermore, must evince its own standards of excellence. Visuals, whether hand drawn, copied, borrowed or photographic originals, must be effective in their own right and should link directly to the narrative portion demonstrating an obvious verbal-visual connectedness.

- The student will, additionally, be able to work cooperatively and collaboratively on video presentations and class dramatizations.

Information Sharing

- By the end of the sixth grade, the student will be able to demonstrate appropriate "packaging" and "presentational" strategies related to written, oral, mediated (slide-tape, video) and dramatized reporting formats.

- **Written reports** will be legibly written (or word processed), properly formatted (including title page) and properly "visualized."

- **Oral reports**, based on summary notes, will be presented in an audible and interesting manner showing evidence of practice (rehearsal). Supporting visual material (transparencies, charts or realia) will be well integrated into the presentation.

- **Mediated productions** (as well as dramatizations) will provide evidence of presentational protocol including a proper introduction, appropriate pacing, proper audio levels and other viewer consideraions.

- **All reports**, regardless of format, will include a simplified bibliography.

Note: Melville S. Dewey Fact Sheet

Although there are some doubts as to the authenticity of the report and the veracity of the reporter, there is little doubt as to the existence of Melville S. Dewey Elementary-Junior High School. Although situated towards the geographic centre of Endless Prairie School Division #26, a warble fly control area, Melville S. Dewey is generally regarded as being found somewhere to the right of just about everything. The building itself is of an older persuasion (though recently renovated, the new wing having opened on April 3, 1968). It is a sprawling and somewhat tumescent facility which, due to its colorful aqua-marine facade, tends to shine brilliantly in the prairie sunlight, day or night. Despite its physical limitations, however, the school boasts of one of the most progressive and dynamic library programs in the free world (wherever that may be).

DEVELOPING YOUR OWN STUDENT INFORMATION PROFILE - DECISION POINTS

As discussed earlier, the task of developing Student Information Profiles is essentially one of responding to a series of questions related to the research process. Such questions can be asked in either global terms, the answers to which help define the vision for the program, or in more specific terms, an approach which will be of more direct benefit in developing activities on a daily basis.

We will take the more specific approach here, proposing a regimen of questions that subject each aspect of the research process to a rather thorough inspection. On the following pages, the phases of the information cycle are explored in depth, as are many of the key steps in each phase. Each step is presented as a decision point, the consequences of each decision having a direct bearing on the instructional activities of both the teacher-librarian and teachers as well as the independent and group activities of the students.

The ideas developed here are not meant to be representative of all of the decision points nor inclusive of all of the alternatives in the information cycle. Our knowledge of the possible options grows daily, as will yours. Thus, the decision-making structure will serve only as a preliminary structure to be consulted less frequently as your knowledge of the various processes and the options therein flourishes. Initially, however, using this decision-making structure as a guide could quickly give you a sense of the shape of a Student Information Profile for any grade level or program benchmark that you might desire. The alternatives listed within each decision area suggest movement from more teacher-directed to more student-directed options.

I. PRE-RESEARCH

Decision Points

1. Decision on the Research Topic

Alternatives

(a) Teachers, or teacher-librarian, select the *general* research category (e.g., solar system, Greece, animals) and assign specific topics. As with option (c) below, both general and specific topics are typically those suggested by areas of curriculum study.

(b) Research topics are suggested by the student or through idea banks such as that contained in *The Big Book of Independent Study*. This approach is characteristic of the "independent study" concept typically presented as a challenge to the student for whom enrichment is sought.

(c) Teachers, or teacher-librarian, select the *general* research area and students, with guidance, select the *specific* topic.

2. Clarification of Topic (or Topic Focus)

Alternatives

(a) Teachers, or teacher-librarian, clarify topics in class discussions.

(b) Students independently clarify the topic (if required) through such techniques as dictionary or encyclopedia searches and/or further discussion with the teacher and teacher-librarian.

(c) After preliminary surveys to ascertain the scope of the topic, students select a particular focus issue, problem, or hypothesis (a strategy appropriate to the more mature student).

3. Development of Questions and Categories (alternatively and progressively, development of focus, issue or thesis)

Alternatives

(a) Teachers generate questions to which students respond.

(b) Teachers guide students in the development of both questions and categories using brainstorming techniques. Categorization techniques could include clustering under major headings, the use of cognitive (mind) maps, and other techniques.

(c) Students develop and categorize questions in small groups with teacher assistance.

(d) Students develop and categorize questions individually.

Moving up the taxonomy . . .

(e) Teachers devise issue-based research problems and assist in the enumeration of those areas of discussion and research that are likely to be most productive in pursuit of resolution of the issue.

(f) Students generate, with teacher assistance, theses or hypotheses to guide the research process.

(g) Students independently generate and persue areas of in-depth investigation.

4. Decision on an End-Product

Alternatives

(a) Students are exposed to a limited range of possible end-products with emphasis on the creation of written reports. Decisions as to the end-product are generally teacher and teacher-librarian determined as are the standards for that product, i.e., length of report, quality, nature of bibliography, and so on.

(b) Students will be exposed to an increasingly broad range of reporting mediums and given sufficient opportunity with each form to acquire relative proficiency in each. Teachers may retain control over the format and will require products demonstrating greater length, quality and creativity. Students will begin to move from straight report writing to more of an issue or thesis-based approach.

(c) Students, as a result of wide exposure to a variety of reporting forms and considerable practise with each form, select the most appropriate medium for the information task. Personal preferences will also play a role in selection. Standards may be teacher determined or jointly established.

II. INFORMATION RETRIEVAL Decision Points

Information Retrieval refers to the student's ability to utilize acquired skills and strategies to locate relevant resources as well as to locate pertinent information within each resource.

At some point very early in the decision process, it will be necessary to determine whether students will be actively involved in an information search or whether information will simply be made available to them. Reasons for omitting the *information retrieval* phase of the project include:

- limited or inappropriate resources, obviating the need to search for information (there being none to search for). Such circumstances may necessitate the manufacture (by teachers and teacher-librarian and others) of appropriate resource materials.

- the need for uniformity of information and the need, therefore, to constrain the information search to a common information base.

- time considerations.

1. Decision on the Nature of the Information Search

Alternatives

(a) Students are directed to specific resources situated within learning stations or centers where they are required to respond to teacher-devised questions. Frequently, students are directed to particular pages or specific sections within a resource in order to answer the question(s). Stations are often developed on a format basis - a magazine station, encyclopedia station and so on, to ensure exposure to a variety of media.

(b) The teacher-librarian selects appropriate resources for use by students. The student must still independently locate information within the resource.

(c) The teacher-librarian develops lists of likely resources or prepares specific bibliographies for use by students.

(d) Students, as part of an assignment, are directed to locate a specific number and type of resource (e.g., use a minimum of five resources including at least one magazine, one filmstrip and no encyclopedias). This is a variation on the open-ended research theme.

(e) Students locate suitable materials through an open-ended research process appropriate to their developmental level. A suggested prior step is to have students formulate an *Information Retrieval Plan.*

2. Development of an Information Retrieval Plan

In order to effect an *Information Retrieval Plan,* students will need to be working from both a *strategic* and a *skill* base. Knowing which *information sources* or *directories* to invoke to acquire information on a subject needs, obviously, to be combined with the skills to use those sources. Thus, skill teaching will be required in order that students can proficiently use such information sources or directories as: the computer or card catalogue; indexes such as the encyclopedia and magazine indexes; relevant film and video catalogues; specialized and appropriate reference works; and, possibly, such exotica as CD ROM and on-line searching.

Alternatives (For Open-Ended or Relatively Open-Ended Research)

(a) Students are assisted by the teacher and teacher-librarian in developing an Information Retrieval Plan. Subject headings, the priority listing of information sources, and key word lists are group brainstormed or otherwise presented or developed in a teacher-directed setting. This technique will work best when the class is confined to one category of research like *General Works* or *Biographies* when a common research strategy can be utilized.

(b) Students, individually or in small groups, generate Information Retrieval plans including a listing of subject headings, a listing of likely information sources and/or directories, and key word lists. These lists will be checked for wellness by the teacher-librarian or teacher prior to the information search.

(c) Research is totally open-ended and students must independently devise an Information Retrieval Plan, taking into consideration such factors as research category, currency, and place decisions. Further, students will independently devise a list of subject headings and key words.

III. INFORMATION PROCESSING

Decision Points

Information processing demands that the student be able to accomplish three major tasks:

(1) Interact with resources to obtain the required information (i.e., read, listen, view, touch, interview, construct . . .). While the processing of information at the comprehension level - and the identification of its salient bits - may be the primary information processing objective, it is but the first step in the creation of informed and discriminating users of information. Some additional capabilities that may be considered include the ability to:

- compare resources and select the most suitable (based on appropriate criteria)
- ascertain point of view or editorial position
- be sensitive to informational bias and inaccuracy

(2) Add gathered information to some sort of structure. This structure may be internal (i.e., a memory/cognitive structure) or external (i.e., web, data bank, outline).

(3) Record, in bibliographic form, the resources from which they obtained information.

1. Interacting with Resources

Alternatives

(a) Students, in a large group setting, learn strategies for processing different types of information, e.g., note-taking strategies related to selecting main ideas or to the answering of questions; picture study techniques; listening strategies.

(b) Through the use of stations, students are exposed to specific techniques for processing an expanded array of information types, both print and non-print.

(c) Students independently apply learned strategies for processing all informational forms.

2. Data Collection Strategies

Alternatives

(a) Students in a whole class configuration, are taught to develop and apply a particular note-taking strategy such as a data bank, web, or outline.

(b) Where sufficient computers and expertise are gathered, it may be possible to develop a computerized data-base such as those made possible by such programs as *Bank Street Filer* and *Hypercard.*

(c) Students independently select and apply the most appropriate note-taking or data gathering strategy be it manually constructed, or entered into a computer data base.

3. Bibliography Preparation

Alternatives

(a) As a class, students are instructed in the preparation of a bibliography appropriate to grade level.

(b) Individually or in small groups, students generate a bibliography based on prepared samples.

(c) Individually, students generate a bibliography according to a predetermined format.

IV. INFORMATION ORGANIZING AND CREATING Decision Points

Information acquired from resources and added to data collection devices (data banks, etc.) must eventually be organized into a response. Depending on the chosen reporting medium, sentences may be organized into paragraphs or parables, poems or psalteries, paradigms or plays.

Students will need to be introduced to these various forms and to the varied styles appropriate to communicating in these forms. Writing a script for an audio-visual presentation is, for example, substantially different than preparing a written report even though both have their genesis in written expression and imaginative thought.

Further, depending on the communication medium chosen, a variety of other skills and strategies may need to be in place. To effectively produce an audio-visual presentation requires a host of competencies including, potentially:

- Photographic skills
- Other media-related skills such as those required to produce a slide tape presentation
- Video production capabilities
- Computer based skills including those required to generate computer graphics; to word process and, by extension, desktop publish; to utilize some of the newer *desktop video* programs in order to generate high quality computer graphics (including computer animation frames) for transfer to video tape.

These in turn must be developed through practise and the opportunity afforded through the library and classroom programs.

1. Organizing And Grouping Information

Alternatives

(a) Students are instructed in the grouping of related information as recorded in data banks, webs, and other note-taking structures. The macrostructure of the report will likely be teacher determined.

(b) Students suggest methods for organizing related information in paragraph form. They may further suggest an organizational structure for the product, be it written, mediated, or constructed.

(c) Students independently structure their reporting mediums demonstrating strengths in the effective organization of their information at the structural level and in the grouping of the information at the internal level.

2. Creating Information

To be effective, information must not only be well organized but developed in an interesting and creative way.

Alternatives

(a) Students are instructed in the creation of interesting sentences, paragraphs, diagrams, visuals, models and so on.

(b) Students participate in the brainstorming of techniques to enrich and enhance their reports in creative ways.

(c) Students independently create interesting communications in a variety of reporting forms.

V. INFORMATION SHARING — Decision Points

Information sharing divides into two major areas 1) consideration of the desirable characteristics of the product, presenter and presentation, and 2) consideration of audience protocol.

1. Desirable Characteristics of Product, Presenter, and Presentation

As there are many ways of sharing information there would obviously be a complement of skills and strategies appropriate to each one. The making of an effective oral presentation demands somewhat different strategies than those required to prepare and present a dramatization or which attend the showing of a pre-produced mediated presentation (in which case most of the elements of an effective presentation - pacing, visual/verbal relatedness, information density and the like - would have attended to during the organization and creation phase).

Alternatives

(a) Teacher demonstrates effective presentational strategies. Students identify points of effectiveness. Teacher points out areas that students may have missed. Points include:

- Pleasant appearance
- Unflinching eye-contact
- Articulate and expressive voice indicating command of subject and interest in it
- Letter perfect blackboard graphics
- Exemplary integration of support materials (maps, charts, media)
- Appropriate audience involvement
- Structure (beginning, middle, conclusion), pacing
- Development of questions

(b) Students with teacher guidance brainstorm appropriate presentational strategies.

(c) Students independently devise and apply a presentational strategy appropriate to the information task.

2. Audience Protocol

Hopefully they'll be listening, but paying attention is a learned behaviour for most students, going against their natural urges. Therefore, a little preparatory work prior to the big event could make a significant difference. Some points to look for:

- Eye contact with the presenter
- Being "in touch" with the presenter but not with other audience members
- Preparation of questions to ask of the presenter
- Preparation of comments on unique, unusual and interesting aspects of the information or presentation
- Evaluation of the presentation

Alternatives

(a) Teachers define appropriate audience behaviour.

(b) Students with teacher guidance brainstorm methods of meaningful involvement.

(c) Students independently devise their own strategies for attention, retention, and involvement.

Summary

In this chapter, we have suggested that a reductionist, skills-based, scope and sequence chart approach to the definition of a school library program is no longer productive. It is an approach in which there is a tendency to lose sight of the forest for the trees. We propose, instead, generating statements of student outcome behaviours which specify, in rather plain language, the decision-making abilities expected of students by the end of a school term. These statements would typically describe a student's ability to independently activate and engage in appropriate strategic or problem-solving behaviours in order to complete an information-related task. We have, therefore, dubbed these behaviours "student strategies." The complete list of student strategies for any given year or milestone period we have called a Student Information Profile.

To successfully build student strategies or problem-solving behaviours at any grade level, there is still a need to develop a knowledge and skill base. In the approach developed here, however, skills are developed in the context of strategy building, taught as necessary in order to facilitate the actioning of the larger strategic behaviours.

The process of moving students from information dependence to information independence is one of the primary functions of a school library program. It is a process that can be thought of as an extended continuum of events beginning some time prior to kindergarten and concluding at a point some distance beyond the end of formal schooling, if it is ever concluded at all. It is important, however, that progress in the direction of independence be checked periodically and along several different dimensions. Students Information Profiles would seem to be a useful tool in this regard.

REFERENCES

Eshpeter, B. J. and J. A. Gray, *Profiling the Information Literate Student - A Strategy for Planning the Library's Instructional Program,* Calgary Board of Education, 1987.

4

Cooperative Planning

COOPERATIVE PROGRAM PLANNING

Given that a primary focus of the library's instructional program is to enable students to be independent consumers of information (i.e., information literate), the question must be posed as regards the most effective and efficient method of achieving this goal. While it is not typically the case, at least in Canada, that Departments or Ministries of Education are wont to mandate curricula in Information Skills and Strategies, it *is*, nonetheless, a frequent expectation that students receive instruction in these "skills." How, then, might/should this occur? In research conducted by the Calgary Board of Education in 1981, it was determined that there were four distinct types of interactions that occur between teachers and teacher-librarians regarding the integration of the instructional programs of the classroom and the library. This information, as summarized by the following chart (Types of Cooperative Planning) provides insight into one of the major professional roles to be played by the school-based teacher-librarian; that of cooperative program planning and teaching.

The intent of the cooperative planning and teaching function is to allow for the integration of information strategies and skills into the curricular programs of the classroom. To accomplish this feat, it is necessary for the teacher and the teacher-librarian to cooperatively plan and teach partial or whole units of study. This process allows for the achievement of each program's common, as well as distinctly unique goals. The role of the teacher-librarian, however, is *not* merely that of "helping teachers teach," but rather that of representing the particular content and processes of the library instructional program. As equal partners in the process, both sets of educational objectives will be met to the ultimate benefit of the students.

In respect to the types of cooperative planning identified, it must be noted that only when there is program implementation through Types 3 and 4 planning can one really say that the goal of student information literacy is likely to be furthered. Types 1 and 2 planning are basically teacher-services, orienting themselves around the teacher-librarians' ability to, in the first instance, simply provide a supply of resources which are required by a teacher to teach a unit, and in the second case, to additionally provide some measure of expertise to the teacher regarding the potential use of the resources and/or a match that might be made between resources and students. In no way would these types of cooperative planning be considered adequate as mechanisms for offering a library instructional program which is systematic and developmental, designed to lead to information literacy. They simply reflect the teacher-librarian's knowledge of how to connect teachers' units, kids, and resources.

The "Types" Exposed

If we were to look for examples of the "types" in action, what might we expect to see? Teacher-librarians will recognize these brief examples as well as be able to embellish them with many of their own. A Type 1 planning encounter is often characterized by the teacher request to "Pull all of the materials for my upcoming unit on Dinosaurs." These requests will often be for resources to be pulled and located on book trucks in the library for use by a class for a particular research unit or, alternately, the resources will become part of a (temporary) classroom collection. Teacher-librarians frequently, but not always, delegate this type of request to a library assistant, parent volunteer, or student page.

A Type 2 consultation also relies heavily on the provisioning of resources to meet a teacher's needs, but also typically involves additional consultation based in the teacher-librarian's knowledge of the students and of specific resource materials that may be appropriate. For example, a teacher request for "all of the resources on Alberta" would be followed by a conversation in which the teacher-librarian might say: "Do you have Mary in your class this year? I know that last year she really struggled with the reading level of the materials for the research unit. I have a new set of pictures for this unit that might suit Mary's needs." Another form of Type 2 is: "We just received a new Bill Peet book, and I remembered that you're studying his books. Could I introduce this book to your class?" These types of brief encounters often are referred to as a "one-legged" consultations, as they occur for the length of time that you can stand on one leg, typically in the hallway, staffroom, or on supervision.

Implications of Types 1 and 2

While Types 1 and 2 consultation do not *at all* address the issue of the development of information literate students (they are, you will remember, basically teacher services, focused on resource provisioning) they are, nonetheless, an essential part of a balanced cooperative planning profile. Types 1 and 2 are, for new teacher-librarians (new to the school, or new to the program), credibility-builders, bread and butter business. They are a way of beginning the conversation with teachers regarding the role that the library can play in the instructional program of the school. If, however, there is consultation offered *only* at this level, the program is relegated most frequently to a role of lesser importance in the total fabric of the students' learning. In schools where we see evidence of a predominance of these types, it is also frequently the case that the library's instructional program is a "skills-in-isolation" approach, characterized by regularly scheduled library classes (designed to teach kids how to find things - in case they ever need to), an inability of students to actually exhibit competence in the skills that they have been taught and an overall lower positive attitude towards the library.

Type 3

Type 3 consultation is also familiar to many teacher-librarians. In this instance we might typically see a teacher approaching a teacher-librarian with "I want my students to begin the Biography unit in two weeks. Remember last year when we did the unit many of the students simply copied their reports out of the encyclopedia. I really don't want that to happen again . . . can we sit down and plan for the research part of the unit?" The

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teacher usually brings to the cooperative planning session an overview of the unit (frequently a unit that has been previously developed and/or implemented) with a specific need to plan *just part* of a total unit. The teacher-librarian and the teacher proceed to cooperatively plan and eventually teach and evaluate lessons dealing with the research event. The teacher-librarian's total involvement in a six week unit of study might be only a total of six lessons. Alternatively, the teacher-librarian and the teacher may plan the entire unit but, once again, the teacher-librarian's teaching involvement may only be for six to eight lessons. Type 3 planning, then, is a very effective and efficient way of integrating the library and classroom programs. It allows the teacher-librarian the opportunity for multiple encounters with many classes over the period of a school term. For many teacher-librarians in very large schools who find themselves unable to frequently plan and implement enough *total units* of study (problem: too many teachers, too many kids, and not enough teacher-librarian time to go around), Type 3 offers a very viable solution. Similarly, in very small schools (problem: too few teachers, too few students, not enough teacher-librarian time), Type 3 is also very appropriate. Both classroom and library program goals can be addressed through multiple opportunities for student exposure to library strategies.

Type 4

Type 4 consultation, although "highest" in number, should not necessarily be considered the "10" of the library world. Type 4 is characterized by total involvement in unit planning, teaching and evaluating. The teacher-librarian becomes almost indistinguishable from the classroom teacher when implementing the unit. Certainly the library and classroom programs have the potential to be entirely integrated through this type of planning, and although this way of operating is very rewarding, there are drawbacks. A teacher-librarian, in this instance, runs the risk of becoming a seconded classroom teacher, more concerned about teaching "one-third of the China unit" than "holding up the end" for the school library program. This Type is also incredibly time consuming, both in planning and teaching time. As well, Type 4 is often somewhat intimidating to first-timers (either first-time teacher-librarians or first-time teachers).

Our advice to beginning cooperative planners would be to start your planning adventures at Type 3. That way, everybody involved can check to see "how they like it" on a short-term basis before signing on for the long haul. It is our belief that a cooperative planning profile that targets Types 2 and 3 on an ongoing basis is a very healthy one, indeed. It recognizes the teacher-librarian's expertise in matching resources, units, and kids, while allowing for multiple opportunities for the integration of library and classroom strategies. Issues of program balance and equity must of necessity be addressed when determining an appropriate cooperative planning profile for the school.

TYPES OF COOPERATIVE PLANNING*

	TYPE 1	TYPE 2	TYPE 3	TYPE 4
DEFINITION	Consultation leading to provision of resources.	Consultation leading to enhancement of classroom program.	Cooperative planning leading to enhancement of the classroom program and integration of the library program.	Cooperative planning leading to equally enhanced resource centre and classroom programs through cooperative planning, teaching, and evaluating.
TEACHER-LIBRARIAN'S ROLE	Provides resources upon request. *or* Suggests resources.	Attempts to match resources to overall program needs as well as individual student needs.	Participates primarily in the planning and implementation of "library-related" aspects of the unit (e.g., a research component).	Full partner with teacher in planning, teaching, and evaluating the entire unit.
TEACHER'S ROLE	Asks for resources which are often taken to the classroom. *or* Responds to suggestions regarding suitable resources.	Talks with librarian about classroom program needs.	Develops overall unit plan. Plans with teacher-librarian in regards to specific aspects of the unit that will be implemented cooperatively.	Cooperatively plans, teaches, and evaluates unit with teacher-librarian.
RESOURCE CENTRE PROGRAM PROFILES	Resource Centre programs range from the "skills in isolation" approach to "parallel programs" to situations in which students have no significant library contact.	Resource Centre programs range from the "skills in isolation" approach to "parallel programs" to situations in which students have no significant library contact.	Library program and classroom program are interrelated with systematic integration and development of information skills and strategies.	Complete integration of resource centre programs and classroom programs.

NOTE: Types 1 and 2 consultations are perfectly acceptable provided that they do not characterize the total planning contact between the teacher-librarian and the teacher. Type 3 and 4 consultations are required at least twice a year to implement an integrated program.

**Growing out of research conducted by Dr. Bill Reeves, Judy Gray, and Yvonne Hodges and reported in "School Library Program Evaluation," CBE, Spring 1981.*

A TYPE 3 RESEARCH EVENT

PLANNING CALENDAR FOR THE MONTH OF February, March

	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
FEB		23 • View F.S. #1 • Develop background • Brainstorm questions	24 • View F.S. #2 • Develop background • Brainstorm questions	25 • View F.S. #3 • Develop background • Brainstorm questions	26 • Rewrite, weed, extend, refine questions	27 • Classify questions under headings (web)	
MAR		2 • Model note taking	3 • Practise note taking • Bibliography tracking sheet	4 • Prepare for trip to Tyrell Museum of Paleontology	5 • Tyrell Museum trip	6 • Process information from trip • Begin folders	
		9 • Library centres	10 • Library centres	11 • Library centres	12 • Model paragraphing	13 • Paragraph notes into rough copy	
		16 • Edit rough copy	17 • Prepare bibliography	18 • Work on good copy	19 • Share and evaluate	20	
		23	24	25	26	27	

Based on a "dinosaur" unit developed for Grade 2 students at W.O. Mitchell Elementary School, Calgary

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Fullan, Michael, *Curriculum Implementation: A Resource Booklet,* Toronto: OISE, 1981, pp.72.

Hodges, Yvonne, Judy Gray, William Reeves, *School Library Program Evaluation,* Calgary Board of Education, Spring 1981.

Hodges, Yvonne, Judy Gray, William Reeves, "Types of Cooperative Planning," *School Library Program Evaluation,* Calgary Board of Education, Spring 1981.

Turner, Philip M., *Helping Teachers Teach: A School Library Media Specialist's Role,* Littleton, Colorado: Libraries Unlimited, 1985.

5

Reproducible Masters

THE FOURTH WAVE

FIRST WAVE

Library As A Subject

- Literature/Skills Programs.
- Skills in isolation
- Literature in isolation.

SECOND WAVE

Cooperative Planning

- First major rethink of the teacher-librarian's role.
- Salvation through good works (in other curriculum areas)
- Identity crisis. Who were we?

THIRD WAVE

Common Ground Relationship

- Recognition of roots.
- Scope and sequence charts unfurled
- Equivalency of programs at the sub atomic level.
- Library programs still below "see" level
- We're almost there.

FOURTH WAVE

Information-Based Programs

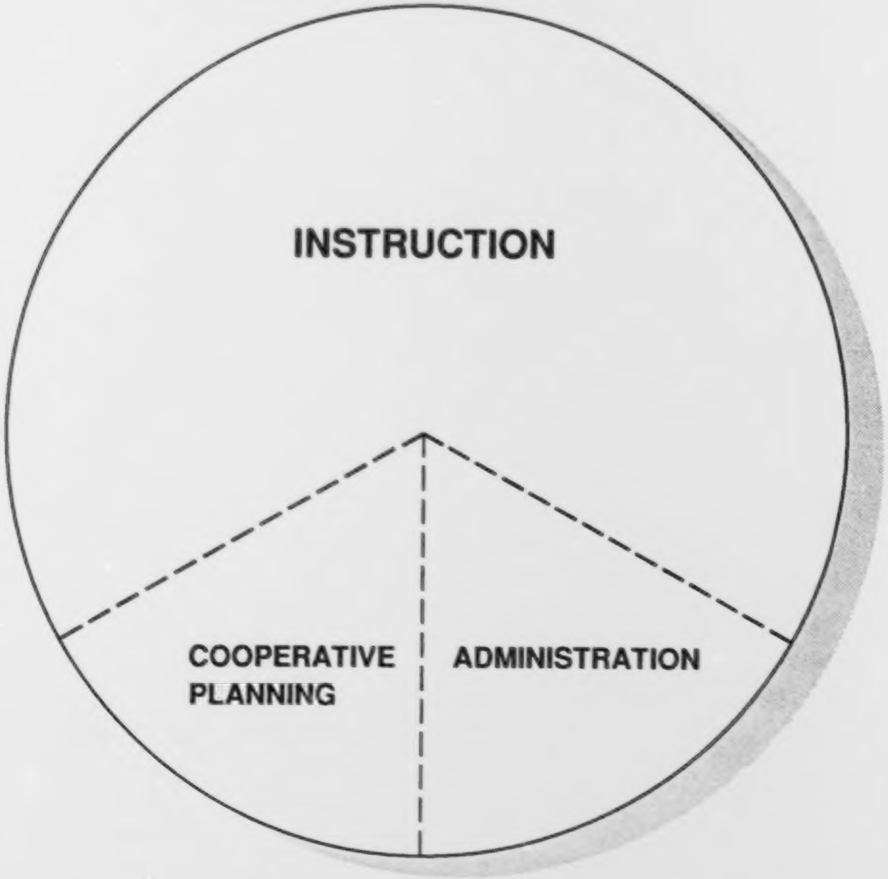
- An identifiable and expanded body of information-related content
- Strategy rather than skill based.
- Total integration through cooperative planning
- Program equivalency.

STRATEGY

A systematic method of solving an information-related problem based on a thorough knowledge of choices and the requisite skills to action those choices.

THE SCHOOL LIBRARY PROGRAM

A GENERIC MODEL



INSTRUCTION

COOPERATIVE PLANNING

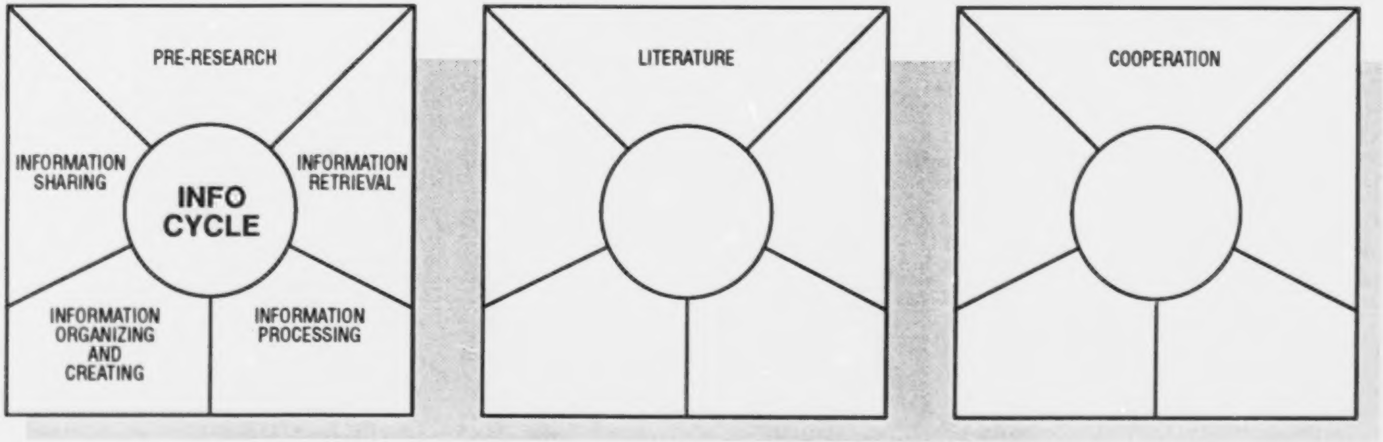
ADMINISTRATION

INSTRUCTIONAL STRANDS

INFORMATION CYCLE

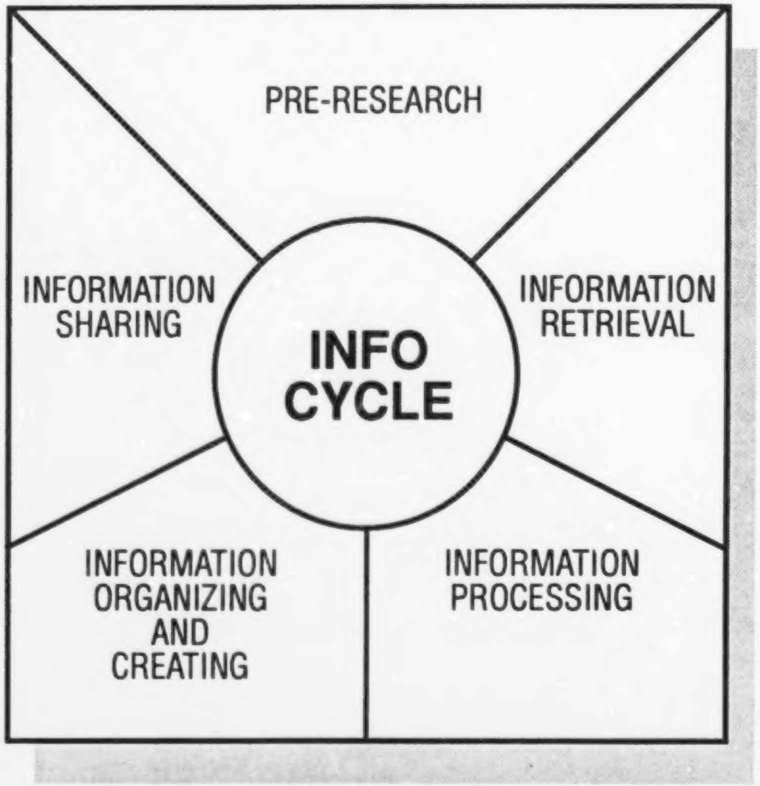
APPRECIATION OF CULTURE

SELF CONCEPT AND SOCIAL SKILLS



Although the information strand (The Information Cycle) is shown as completely developed, the remaining two strands have been left almost entirely open-ended. Thus the Appreciation of Culture strand is shown with a suggested literature component while the Self Concept and Social Skills strand includes a concern for student cooperation. As to how the remainder of the two program strands should be completed, we suggest that it is a matter for individual schools to decide. For example, in the Appreciation of Culture strand, the school may wish to additionally emphasize film or video, music, art and photography, these components being as few or as numerous as time, energy and resources permit.

THE INFORMATION CYCLE



PRE-RESEARCH

INFORMATION
SHARING

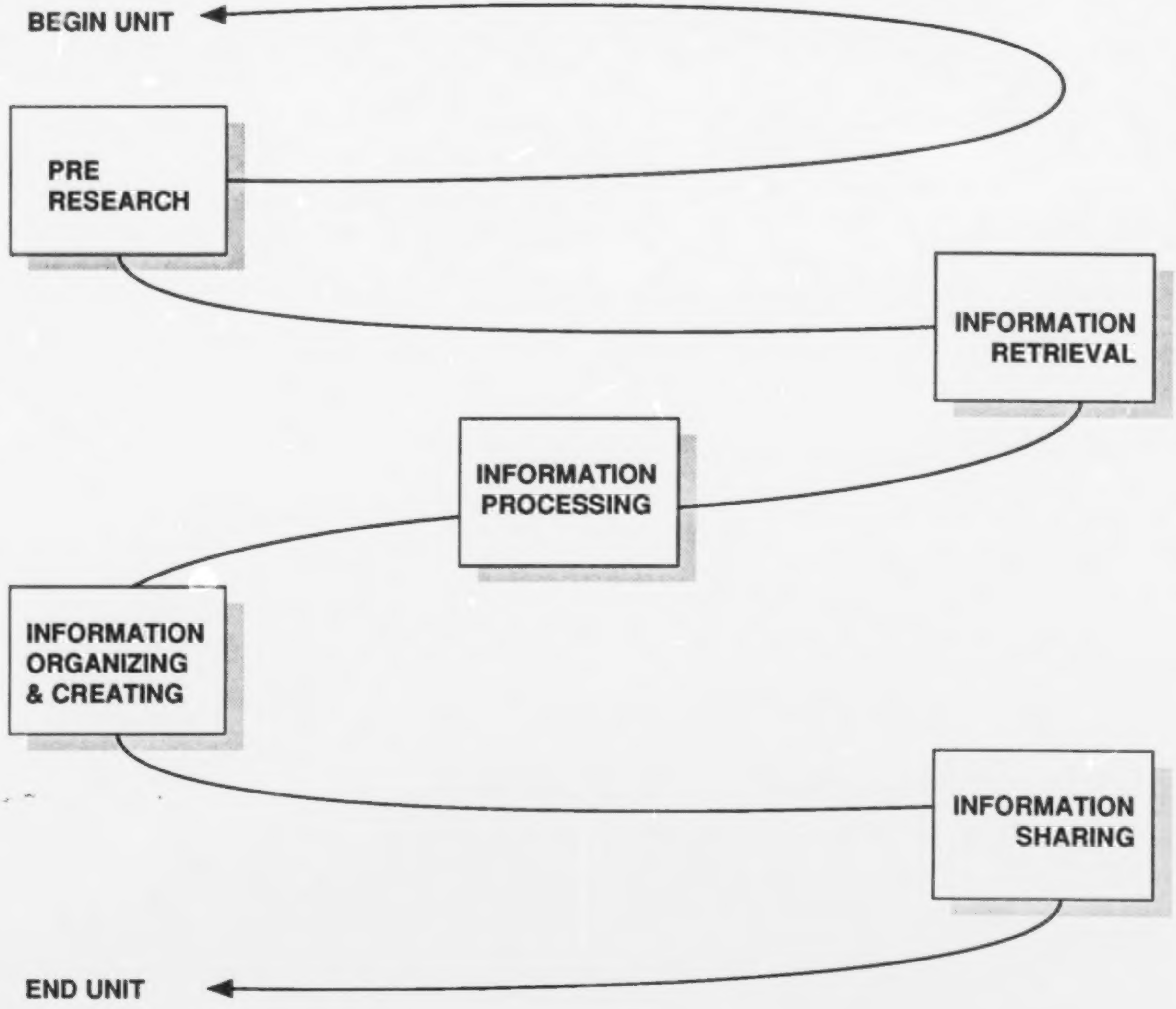
INFO
CYCLE

INFORMATION
RETRIEVAL

INFORMATION
ORGANIZING
AND
CREATING

INFORMATION
PROCESSING

THE RESEARCH PROCESS (INFORMATION CYCLE)



BEGIN UNIT

PRE
RESEARCH

INFORMATION
RETRIEVAL

INFORMATION
PROCESSING

INFORMATION
ORGANIZING
& CREATING

INFORMATION
SHARING

END UNIT

Developed by: B. Eshpeter, J. Gray (Oct. 1987)

PRE RESEARCH

1. A decision on the research topic.

2. Clarification of the topic or of the research issue or focus.

3. Determination of students' prior knowledge.

4. Development of questions to be answered, discussion to be developed, or issues to be resolved.

5. Organization of questions and issues into related categories.

6. Decision on the end-product.

7. Decision on the research methodology to be employed - from focused research using limited resources to open-ended research.

8. Review of other steps in the Information Cycle including consideration of the information processing, synthesizing, creating, and sharing strategies to be employed.

INFORMATION RETRIEVAL STRATEGIES

In order for students to most efficiently and effectively locate information related to a research task, they will need a complement of skills and strategies appropriate to their age and ability level. These will include:

1. The ability to formulate an Information Retrieval Plan including:
    a. Likely Subject Headings
    b. A prioritized list of information sources or directories based on the identified Research Category, e.g. General Works, Biographies
    c. A key word list for locating information within a resource.
2. The ability to action the Information Retrieval Plan including the ability to:
    a. Skillfully use the information sources or directories to find resources (hence, information).
    b. Locate the actual resources.
    c. Find relevant information within the resource.

AN EXAMPLE OF AN INFORMATION RETRIEVAL PLAN

TOPIC ____________________

RESEARCH CATEGORY ____________________

SUBJECT HEADINGS	SOURCES/ DIRECTORIES	RESOURCES	KEY WORDS	DISASTER PLAN

In the Information Retrieval phase, students are encouraged to prepare an information retrieval plan prior to attempting to actually locate resources. The above example was devised for a high school English class and includes a Disaster Plan should the initial plan prove to be unsuccessful.

INFORMATION PROCESSING STRATEGIES

Information processing demands that the student be able to accomplish three major tasks:

1. Interact with resources (i.e., read, listen, view, touch, interview . . .) at a level of understanding sufficient to identify and obtain relevant information from the resource.

2. Add relevant information to some form of data gathering device - web, data bank, outline, audio or video recording, sketch pad . . .

3. Record, in bibliographic form, the resources from which information was obtained.

Ultimately it is hoped that students will do more than understand the resources that they encounter. With appropriate intervention they may begin to evaluate these resources as information sources, to assess them in terms of interest, clarity, and point of view, and in terms of freedom from information contaminants such as bias, stereotyping and sexism.

INFORMATION ORGANIZING & CREATING STRATEGIES

This phase encompasses the strategies required to categorize and structure data gathered during the Information Processing phase, and to assemble that data into new and meaningful patterns. Again, a non linear phase characterized by:

1. **The Organizing of Information** into sentences, paragraphs, visual/ physical renderings or other thematically consistent information units based on an observed relatedness of that information. This information need not be expressed in written terms alone but can be organized into charts, diagrams, models, visual sequences, point-form transparencies and so on.

2. **The Creation of Information**. This is the writing process, the making process, the photographic process, the artistic process - the sum of the creative events necessary to infuse raw data with life.

3. **A Progression to Excellence**. . . .

INFORMATION SHARING STRATEGIES

The effective sharing of information depends on the student having acquired skills and strategies in the following areas:

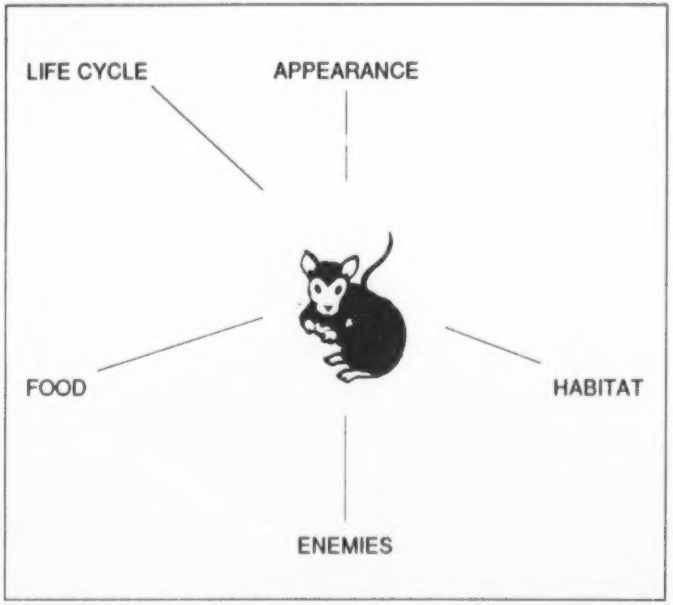
1. The conventions associated with preparing an end-product for presentation

2. The protocols and techniques of effective information sharing.

3. Audience etiquette.

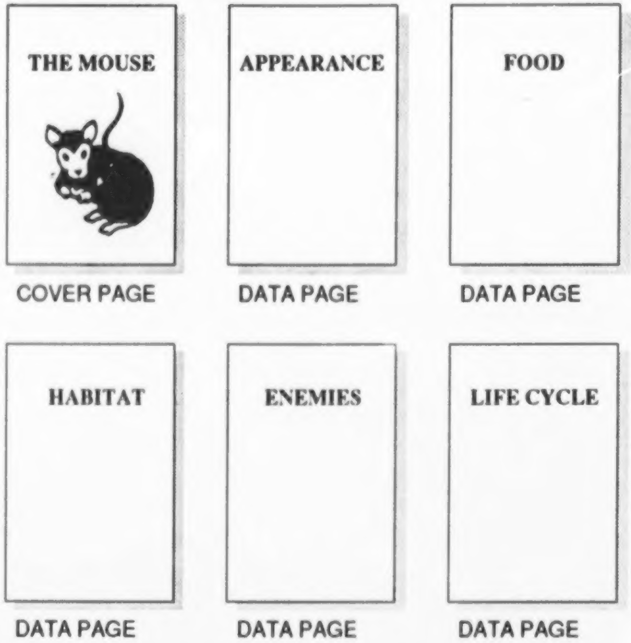
DATA COLLECTION STRUCTURES

WEBS



Webs may not be particularly practical for the younger researcher. Given the young child's still developing fine motor skills and a limited space in which to apply them, there is seldom room for both questions and answers on the web. Webs, at this level, fare better as reporting devices, being both interesting and effective ways to share information.

DATA BANKS



Questions developed during class for small group discussions are added to the appropriate pages of the data bank. Answers, as discovered, are written in the spaces below the questions. Simple bibliographic info (book & magazine titles and some dates) can be added to the backside of the data pages, there to await a more formal bibliographic presentation developed as part of the final report.